The Chemical Age

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NOTICES:—All communications relating to editorial matter should be addressed to the Editor, who will be pleased to consider articles or contributions dealing with modern chemical developments or suggestions bearing upon the advancement of the chemical industry in this country. Communications relating to advertisements or general matters should be addressed to the Manager.

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A Chemical May Meeting

As some compensation for those members who may not be able to attend the meetings in Canada and the United States arranged for August-September next, the Society of Chemical Industry and the Institution of Chemical Engineers have jointly arranged a series of conferences to be held in London next month. The programme will open on Friday, May 11, with the annual general meeting of the Chemical Engineering Group and an address by Mr. F. H. Carr on "Some chemical engineering aspects of the fine chemical industry." Saturday will be occupied by a visit to the Rothamsted experimental station, and the Sunday arrangements include service in the Temple Church and a visit to the gardens of the Zoological Society. On Monday Sir Arthur Duckham will speak in the morning on "The fuel industries and the work of the chemical engineer," and in the afternoon papers will be submitted by Sir Alexander Houston on "Water purification," and by Mr. J. H. Coste on "Pollution of tidal and non-tidal streams." The special speakers on Tuesday morning will be Sir Alfred Mond and Sir John Russell, and in the afternoon Colonel Pollitt will add a chapter or two to the informing public history of "Billingham" which he began in Edinburgh last year.

As regards the joint visit of these two societies to Canada and the United States, the provisional programme looks distinctly attractive, though there are several gaps that make exact budgeting as to the exact total cost a little difficult. These, however, will probably be filled up later, and the visit of Mr. H. C. Parmelee, the secretary of the American Institution of Chemical Engineers, to London about the end of this month will afford welcome opportunities for personal discussion of various details. The decision to travel as a party, tourist third class, on the White Star liners *Megantic* (eastbound) and *Celtic* (westbound) is proving more popular than at one time seemed likely, and the provisional bookings, we understand, are already about 70, while some members who cannot take the complete tour may proceed direct to New York for the concluding week.

Cost of Industrial Production

THE new volume on "Further factors in industrial and commercial efficiency," issued this week by the Committee on Industry and Trade, discusses the important question of costs of production and distribution in terms which, though general, are still of some value. Taking 50 undertakings or groups of undertakings, it is estimated that the average rise in industrial costs in the chief exporting trades between 1913 and 1925 has been from 80 to 90 per cent. Judged by a basic figure of 100, the total costs, as compared with 1913, range from 120 (heavy oil engines) and 133 (blasting explosives) to 275 (Egyptian cotton spinning). Of the groups of trades, the textile group, with an average of 225, shows much the highest rise, while shipbuilding (147), iron and steel (162), general engineering (166), and chemicals (174), show the lowest rates of increase. Dealing with wages costs, it is estimated that the average proportion borne to total cost by labour employed directly or indirectly on production is in the neighbourhood of 30 to 40 per cent. The highest percentage was found in coal mining (70·7); among the lowest were coke (about 9), and basic pig iron (10). In the return for heavy chemicals, while the percentage of labour costs is about 20, overhead charges, including maintenance, predominate, the item "other expenses" amounting to half the total cost of production. In the period between 1913 and 1925, the Committee find that on the average the wages cost of production has increased about 90 per cent., the chemical group (including dyes, explosives, and soap) coming out highest with an increase of 129 per cent. In this connection mention is made of the "disproportionate rise in wages for unskilled labour experienced in full force by the chemical group."

Some inquiry has been made into the costs of distribution, which have an important bearing on competitive export business and also on the purchasing

power of the community, but it appears to have been limited to two departmental stores and three retail co-operative societies. In the former the gross margin between the cost of the goods and the price at which they were sold retail averaged 26 per cent. of the retail price in 1925, as compared with 20 per cent. in 1913. The corresponding margin in the case of the co-operative societies averaged 20½ per cent. in 1925 and 19½ per cent. in 1913. The figures bearing on the cost of wholesale distribution are too limited to enable any safe comparisons to be made, but so far as they go they suggest that about one-third of the retail price of commodities as a whole goes to the wholesale and retail distributors and the remainder to the producers and the transport agencies. Discussing the general effects of over-capitalisation on costs and prices, the Committee come to the conclusion that, while over-capitalisation may have deplorable results on the conduct of a business, it can have no material effect on the level of costs of production.

The Search for New Alloys

DR. ROSENHAIN'S annual report on the work of the Metallurgy Department of the National Physical Laboratory is already so severely condensed as a record of the valuable research in progress there that no abstract is possible, and the most that can be done is to indicate a few of the many points with which it deals. One of these is the effort to find an alloy or group of alloys presenting mechanical properties, particularly in the wrought state, superior to those of existing commercial alloys. The anticipation of such improved mechanical properties is derived from the fact that certain alloys of aluminium with zinc and copper attain considerably higher degrees of strength than alloys of the duralumin type. The alloys of aluminium with chromium and with barium have been investigated in a preliminary way, but so far without giving indication of promising results. The investigation of the mechanical properties of magnesium and magnesium alloys has been resumed, after discontinuance for a time. Work on the production and properties of pure iron has been continued during 1927 with good results, and work has also been done on the production of silicon in a state of high purity.

The investigation of beryllium has been directed towards the production of the metal in a purer, and if possible, more ductile form; the study of the constitution of the beryllium-aluminium alloys has also been continued, and the results agree reasonably with those of Oesterheld. Small quantities of beryllium metal having become available as the result of the investigation into the preparation of this metal, an attempt has been made to study the alloys of iron and beryllium. Numbers of these alloys have been prepared, using both high-purity iron and a commercially "pure" iron as the basic material. Efforts have been made to obtain thermal curves in a nitrogen atmosphere, but this has not proved possible owing to the formation of a skin on the lumps of metal which prevents them from coalescing on fusion. It is hoped that this difficulty may be overcome by the use of hydrogen in place of nitrogen as an atmosphere during fusion. It is also possible that the application of slight pressure will be sufficient to burst the "skin" and secure the coalescence of the molten lumps. It may be mentioned that a similar difficulty, but in a more severe form, occurs in the melting of beryllium metal itself, but this can be overcome by carrying out the fusion under hydrogen at reduced pressure. The solubility limits of beryllium in iron have been determined between 1,000° C. and room temperature. The beryllium appears to exist in the iron in the form of an iron-beryllium compound, of which the composition, however, has not yet been determined.

Belgian Chemical Trade

THE report on the Economic Situation in Belgium in 1927, by J. Picton Bagge, just published by the Department of Overseas Trade (H.M. Stationery Office, pp. 156. 4s.), gives generally a favourable account of the commercial and economic conditions of the country and indicates that the chemical industry is fully holding the position it has occupied for many years past. The general development of Belgian chemical industries, which set in after the war, has steadily continued and the number of products has been increased. Synthetic ammonia made by the Claude, Casale and Montecatini processes are now being produced by four factories, while 60 works are engaged in the distillation of coal. Another new product is calcium carbide made by electrical power; the total annual output is 5,000 tons, or half the annual consumption of the whole country. The chemical industry has participated in the general movement towards concentration, four of the most important firms having amalgamated with a capital of 175 million francs.

Generally speaking, the year under review was satisfactory for nearly all forms of chemical fertilisers. The spring demand on the home market, particularly for sulphate of ammonia and superphosphates, is described as excellent, but the market showed less activity in the autumn of last year and prices fell. Toward the end of the year, however, a marked change was noted in the demand for sulphate of ammonia; the market became very firm and prices rose considerably. The same remark applies to Thomas slag for which the home demand was strong. Stocks at the beginning of this year were small, and although the output was normal some of the works were late with their deliveries. The demand for potash salts is reported to have been very heavy, far in excess of that for 1926, which, again, was 30 per cent. greater than that for 1925. A good trade was done in sulphuric acid both for the home market and for export, the total production being some 30 per cent. greater than before the war. The industry as a whole has been free from labour troubles and wages have followed the general upward course.

Books Received

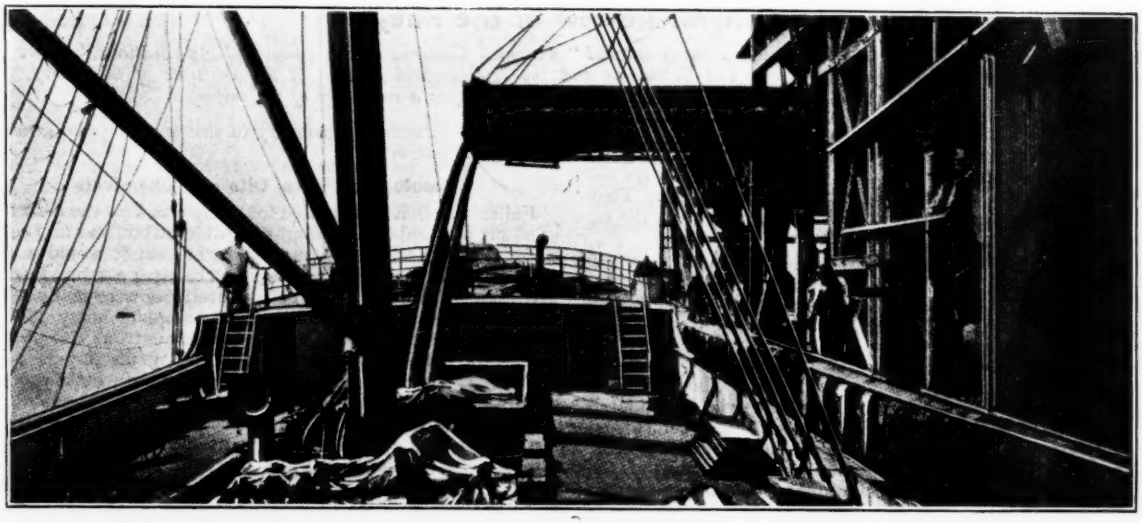
REPORT ON THE ECONOMIC SITUATION IN BELGIUM IN 1927. By J. Picton Bagge. London: H.M. Stationery Office. Pp. 156. 4s.

THE CHEMISTRY OF LEATHER MANUFACTURE. By John Arthur Wilson. New York: Chemical Catalog Co., Inc. Pp. 495. $10.00.

REPORT OF THE BENZOLE RESEARCH COMMITTEE, 1928. London: National Benzole Association. Pp. 237.

THE ARTIFICIAL SILK HANDBOOK. Compiled by the *Silk Journal*. Manchester: John Heywood, Ltd. Pp. 142. 3s. 6d.

RADIATION IN CHEMISTRY. By R. Alan Morton. London: Bailliere, Lindall and Cox. Pp. 284. 15s.



Shipping and Mining of Pyrites

THESE VIEWS ILLUSTRATE OPERATIONS IN THE SHIPPING AND MINING OF PYRITES, AT ONE TIME ALMOST THE SOLE RAW MATERIAL FOR THE MANUFACTURE OF SULPHURIC ACID AND STILL LARGELY USED FOR THAT PURPOSE. THE UPPER ILLUSTRATION SHOWS ELECTRIC BELT CONVEYORS POURING PYRITES INTO THE HOLD OF A FREIGHTER AT THE RATE OF 500 TONS AN HOUR. THE LOWER ILLUSTRATION GIVES A GOOD VIEW OF A RIO TINTO MINE, WITH TRAINS BEING LOADED FOR SHIPMENT.

Activated Carbon and Its Applications

A General Review of the Subject

Mr. J. T. Strachan, A.I.C., F.C.I.C., read a paper entitled "Activated Carbon: Some Industrial Applications," before a combined meeting of the Society of Dyers and Colourists and the Huddersfield Section of the Institute of Chemistry, at Huddersfield, on Tuesday, March 27. The following is a summary of the paper.

THE chief technical applications of activated carbon are: (1) (in powdered form) for decolorising sugar, chemical products, edible oils and fats; and (2) (in granular form) for use in gas masks so as to purify the air from toxic gases. They are also used for the recovery of solvent vapours from the air of factories utilising solvents in industrial processes.

The decolorising qualities of vegetable carbon were known as long ago as the 15th century, but the phenomenon received scant attention until the matter was revived by Löwitz in 1785. Figuer's discovery of bone char in 1812 and the concentrated and successful efforts of researchers to develop the latter product resulted in the comparative eclipse of the vegetable product for a considerable period. The revival of interest in the latter is due to Debussy, who formulated improved methods of production. This work has been carried on, and, particularly during the past 20 years, vegetable char has received very great attention on the part of chemists. At the present time there are numerous carbons on the market bearing distinctive trade designations.

Activated carbon is produced by the destructive distillation of different vegetable materials (such as wood, peat, lignite coal, rice hulls, nut shells, etc.) under special conditions of chemical treatment and heating. The chief methods may be conveniently grouped as follows:—

(*a*) By selection of the material which is afterwards heated (type: blood charcoal); (*b*) by the deposition of carbon on a porous base of inorganic materials (type: bone char).

(2) By addition of chemicals such as phosphoric acid, chlorides of zinc, iron, calcium, etc., after which the mixture is heated to 400—800° C. (type: Carboraffin).

(3) By carbonisation of an organic material, followed by an activation at high temperature (600—1,000° C.) by gases such as steam, carbonic acid, carbon monoxide, chlorine, etc. (type: Norit).

Granular Carbons

Granular carbons found considerable application during the war in gas masks, for the adsorption of poisonous gases from the air. According to Professor Bancroft, the adsorbent had to be capable of reducing the concentration of the toxic gases from about 1,000 parts per million (by volume) to 1 part per million within the 1/10th second that the air takes in passing through the canister. This can be accomplished with a safe margin by several of the carbons at present available. Granular carbons have now a wider application in certain industries for the recovery of solvent vapours from the air of factories. Large quantities of valuable solvents are being used to-day in manufacturing plants such as artificial silk, cordite, celluloid, dry cleaning and rubber factories. Rapid evaporation of the solvent is a prime necessity for economical operation, but, unfortunately, most of this vapour goes to waste. Already industrialists are taking a keen interest in the commercial possibilities of granular vegetable carbons as a means of adsorbing and recovering these vapours, and a number of the more important concerns have erected installations for this purpose, in this country, in Europe, and in America. The owners of some of the large oil wells in Europe and America have erected carbon adsorption plants for the recovery of gasoline from natural gas with distinct financial advantage to themselves.

The cooled air-vapour mixture is passed through a layer of carbon in a cylindrical insulated vessel at a specified speed, and the vapour is selectively attracted by the enormous outer and inner surfaces of the porous carbon granules. The air leaves the adsorber practically stripped of its vapour contents. The vapour is recovered from the carbon by application of steam and subsequent condensation. The carbon is dried with hot air, and finally cooled, when it is again ready for the adsorption process. Amongst the essentials for a vapour adsorption carbon are high power of adsorption, hardness and firmness of structure, regularity of size and shape of granules and low retentivity.

Decolorising Fats, Oils and Chemicals

Fuller's earth has been used for many years for the bleaching of edible fats and oils. When vegetable carbon was first introduced to this industry, it was thought that it would not be possible to compete against the much cheaper earth. Further investigation proved that the two products were really allies, and that their actions on oils were complementary. When the earth and carbon are added to the neutralised oil or fat in certain definite proportions (depending on the oil being treated), much smaller percentages of the mixture can produce equal or better results than if earth were used alone.

The saving involved is not only in cost of bleaching material, but also in reduced losses by retention of oil in the smaller filter cakes. In addition, less material has to be handled, less filter press capacity is required, and smaller expenditures on filter cloths and less labour are necessary. The composition of earth-carbon mixtures necessary to effect maximum decolorisation varies somewhat according to the oil being treated. For solid oils (coconut and palm kernel) the best results are usually obtained with a mixture containing 20 per cent. to 25 per cent. carbon, whilst on liquid oils (cotton seed, ground nut, etc.) 10 to 15 per cent. of carbon is frequently found to be sufficient.

For the decolorising treatment of many chemical products, a pure neutral carbon free from iron salts, chlorides, sulphates, lime, etc., is frequently necessary, particularly in the refining of pharmaceutical glycerine, photographic salts, fine organic acids and salts, alkaloids, etc. The removal of such impurities from carbon is a most difficult matter requiring enormous quantities of washing chemicals and water for complete elimination. The Norit filter is often convenient for treating volatile liquids which cannot well be handled in an ordinary filter press. This filter is convenient for decolorising relatively small quantities of solutions, one unit taking 20 to 80 gallons per hour.

Purification of Sugar

The largest application for vegetable carbon is undoubtedly in the sugar industry. Three types of factories may be considered: (*a*) Factories where raw sugar is made from cane or beet; (*b*) refineries where raw sugar is refined into high quality white sugar for consumption; and (*c*) factories, also working cane or beet, but manufacturing a white sugar for consumption which usually is not of such high grade as refinery sugar.

Bone char has been largely used for many years in the refining and decolorising of sugar. Sugar manufacturers are now paying attention to the advantages offered by the use of vegetable char (either wholly or partially in conjunction with their bone char equipment). The process is specially attractive to factories producing sugar direct from beet or cane, as it can be added readily to the existing plant and enables the manufacturer to turn out a white sugar which can compete with the product of the refineries. Small plants can be operated advantageously.

Finally, reference may be made to the revivification of spent sugar char, taking Norit as an instance. Norit may be revived by (1) burning in absence of air in a Norit kiln; (2) washing with acid periodically to eliminate adsorbed ash; or (3) washing with alkali solution. This can be applied instead of the burning process, but it is not so efficient. Simple apparatus is its chief advantage. Provided the kiln is not overloaded, the carbon can recover 90 per cent. of its original decolorising power, and subsequent regeneration does not materially affect this figure. The losses may amount to 3 per cent. of the tonnage of Norit treated daily so that the total loss of carbon based on treated sugar is negligible. Practical experience shows that a revivification plant pays for itself in a very short time.

Oil Cakes and Cattle Foods

A Symposium at Hull

At Hull, on Tuesday, March 27, there was a joint meeting of the Hull Chemical and Engineering Society and the Yorkshire Section of the Society of Chemical Industry, at which a discussion was held on "Some Aspects of the Oil Cake and Feeding Stuffs Industry."

Four papers were contributed. In the first, Mr. T. Andrews discussed "Some Aspects of the Fertilisers and Feeding Stuffs Act (1926)." In this he pointed out that with the introduction of the Fertilisers and Feeding Stuffs Act, 1926, and the new official methods of analysis which were to come into operation in July, the time was opportune to give, from the works' point of view, some reasons why the change in legislation was due, and to show how the new provisions linked up the manufacturer and the stock-breeder in a manner that the old Act could not. His remarks were confined to feeding stuffs. The Act of 1926 went some of the way towards giving the buyer necessary information.

Continuous Manufacture of Fish Meal

Mr. R. A. Bellwood read a paper on "Fish Meal as a Food for Animals and Poultry and an Improved Continuous Process." He summarised the position of the fish meal industry and dealt with the latest methods of manufacture. Research had shown he said, that fish meal was a highly desirable and valuable product for mixing with other feeding stuffs. White fish meal was made from non-oily fish, such as cod (after removal of the liver), hake, plaice, etc. Herring meal contained a fair proportion of oil. Vast quantities of dried, salted, and smoked fish were prepared in and exported from this country. In the preparation of this product there was about 25 per cent. of waste, so that for every hundred tons of wet fish dealt with there remained 25 tons of what might be termed waste. In 1927, in Hull alone, about 37,000 tons of fish waste received treatment.

The latest factories for the conversion of raw fish waste to fish meal were built of concrete. The raw material was first washed, and then disintegrated between revolving knives. It was then fed in a totally enclosed conveyor to a steriliser in the drying-room. A great feature of the new plant was the practically instantaneous and perfect sterilisation of the raw fish at an exceedingly low temperature, and without the use of wet steam. The whole drying process was now continuous, and every part of the plant was totally enclosed, nothing whatever being seen of the fish or resultant meal in the drying-room itself. From the steriliser the sterilised fish was passed automatically into a series of steam jacketed tubes heated by any available waste steam. The whole process was easily controlled, the waste fish leaving the drying drums in the form of fish meal and being automatically conveyed to the meal room, where it was passed through a grinder and screen and filled into bags ready for transport.

Analysis of Oil and Seed Products

Mr. H. Thompson dealt with "The Analytical Aspect of the Oil and Seed Crushing Industry." He discussed the advances of the last twenty years, and expressed the view that analysts in different parts of the country would agree better if methods and certificates were uniform. The details of the full analysis of seeds, cakes, and meals were the same to-day as they were forty years ago, and they were not likely to alter. Mr. Thompson also mentioned briefly the use of various refractometers, and finally gave reasons for variation in analytical results.

Finally Mr. G. Milne read a paper on "Oil Residues in Animal Nutrition." If the various food proteins were considered singly, he said, in respect of their value for growth and maintenance, they might be ranged in the following descending order of biological value: Milk proteins; fish (muscle) proteins; meat (muscle) proteins; proteins of yeast, of cereals, and of most of the oil seed residues; proteins of non-oily leguminous seeds, and mixed proteins of commercial meat meals containing more or less collagen. Knowledge of the subject of biological values as a whole was at present derived too extensively from experiments upon small laboratory animals, such as rats; and not until the range of experimentation had widened to include the farm animals could conclusions on these subjects be said to be very securely based from the stockfeeder's point of view.

Investigation of Colour Problems

A Discussion of Instruments and Technique

Mr. Hedley Barry gave a lecture on "Colour Problems" at the Société Internationale de Philologie Sciences et Beaux-Arts, Taviton Street, London, on Friday, March 23. The lecture was illustrated by lantern slides and various experiments. Professor Henri M. Leon presided.

In the course of his remarks Mr. Barry said that the first difficulty in any attempt to standardise colours and colour nomenclature was the choice of a standard illuminant. The colour of an object as it appeared to the eye naturally depended upon the light by which it was examined. An examination of the intensity curves of daylight showed that it varied enormously, but that for purposes of standarisation, the light reflected from a blue north sky was the one to be aimed at in selecting a suitable artificial standard. The various lamps which had been designed for this purpose were referred to, and, as an example, two lamps designed by Restlight, Ltd., were exhibited, one of which was designed to imitate cold north light, and was therefore most suitable for colour matching, and the other, designed to give a warmer and more cheerful light, more resembling sunlight, which was suitable for general illumination.

Standard Measurements

Mr. Barry then proceeded to give an account of the various instruments which had been designed to afford a standard measure of colour. These were divided into three classes: (1) Those on the subtractive principle, in which the colour of the sample was matched by means of a combination of red, yellow and blue glasses; (2) Those based on the additive principle, in which the light reflected from a white surface was adjusted in composition by blending the light transmitted through three screens which corresponded to minus red, minus blue, and minus yellow; (3) The spectrophotometers, in which one measured the brilliance of light of various wavelengths reflected or transmitted by the sample. The last method gave a colour brilliance curve and was therefore independent of the personal factor in colour matching; although this was the most scientific method, it was, perhaps, not the most suitable for industrial purposes.

Turning to the industrial and scientific applications of colour measurement, Mr. Barry pointed out that the matter was of very great practical importance. In many industries the value of a product was to a greater or less extent dependent on its colour; such things as fruit, beans, tea, flour, and wines and spirits, all depended to some extent upon their colour for their commercial value. In the chemical laboratory many tests could be greatly accelerated by the use of colour reactions and by measuring accurately the intensity of colour developed; for example, in steel works, magnesium and carbon were invariably estimated by colorimetric methods, and there were many other similar cases. Such methods would doubtless be used to an increasing extent when the measurement of colour was more satisfactorily standardised. In the case of textiles, the importance of colour measurement was obvious, and in dealing with export trade the great advantage of being able actually to telegraph an accurate description of a colour in terms of accepted standards would be enormous.

Finally, there were many problems which could not possibly be tackled satisfactorily until colour was properly standardised, as, for example, the question of colour fading. At present they could only describe fading in general terms, which were almost useless from the point of view of the scientific examination of colour fading.

Ramsay Fellowships for Chemical Research

It is announced by the Ramsay Memorial Fellowship Trust that applications for Ramsay Memorial Fellowships for chemical research must be made not later than June 5. The value of each Fellowship will be £250 per annum, to which may be added a grant for expenses not exceeding £50 per annum. The Fellowships will be normally tenable for two years, and may be extended for a third year. One or more Fellowships will be limited to candidates educated in Glasgow. Particulars may be obtained from Mr. C. O. G. Douie, Secretary of the Ramsay Memorial Fellowship Trust, University College, Gower Street, London, W.C.1.

Liquid Fuel from Coal

A Comprehensive Paper by Mr. Brownlie

On Friday, March 30, at a meeting of the Diesel Engine Users' Association, at 19, Cadogan Gardens, London. Mr. D. Brownlie read a long and comprehensive paper entitled "Liquid Fuel from Coal: An Outstanding National Problem in Great Britain."

Mr. Brownlie stated that the subject of the production of liquid fuel from bituminous coal and other carbonaceous material was a vital matter to those in Great Britain associated, directly or indirectly, with the Diesel engine for two main reasons. The first was that we should be forced to produce our own liquid fuel within our own shores, in safety and free from outside domination, before the Diesel engine in its present or any future form could develop to a large extent in land practice, both for stationary power plant and also in the case of Diesel locomotives, tramways, motor wagons, and large motor vehicles such as the motor bus and the charabanc.

Secondly, liquid fuel production from coal was part of an alteration in our whole national viewpoint, chiefly in the shape of the scientific development to the fullest extent of the resources of our own country, that would have to be accomplished almost immediately if we were to maintain an outstanding position in the world.

Low-Temperature Carbonisation

Mr. Brownlie stated that the technical advances on the Continent in coal liquefaction and the production of liquid fuel from carbon monoxide were jealously guarded secrets, and he therefore only gave a general outline of the processes in his paper. As regards low-temperature carbonisation, however, much more information was available, and he was able to give a very thorough review of the position. He gave a very valuable list of 75 of the most interesting low-temperature processes in the world, and then a brief reference to 30 of the more important ones having actually at the present time large-scale plants in more or less continuous operation.

Among the processes used in Great Britain were mentioned that of the Midland Coal Products, at Nottingham; Mac-laurin process, at the Dalmarnock Gas Works, Glasgow; the pure coal briquette process, which was being operated at Leigh (Lancashire); the Dvorkovitz process, at a plant at Slough; the Coalite process, in operation at Barugh, near Barnsley; the fusion retort process, at Mansfield; the Turner process of the Comac Oil Co., Ltd., at Coalburn (Lanarkshire); the Illingworth process, at Pontypridd.

Conclusions

The importance of the preparation of liquid fuels from coal, alike by hydrogenation, reduction of CO, and low temperature carbonisation, were therefore obvious. In the latter case, taking a rough average through the 75 processes mentioned, one ton of bituminous coal, 25 to 35 per cent. volatile matter, would give about 18 gallons of crude oil per ton, and, say, 2 to 2½ gallons of light oil scrubbed from the gas in the case of most of the processes. The 18 gallons of oil contained 40 per cent. of pitch, and approximately 50 per cent. of the total volume, 9 gallons per ton, was suitable for Diesel engine working, while probably the total yield of refined motor spirit was 2 to 3 gallons per ton. Further indication as to how the time was becoming ripe for low-temperature carbonisation was the advance during the past few years in pulverised fuel firing, and the solid carbonised product from any process was eminently suitable for this method of furnace operation.

Extension of Billingham Water- & Producer-Gas Plant

THE Power-Gas Corporation, Ltd., of Stockton-on-Tees, announce that they have recently secured an order from Synthetic Ammonia and Nitrates, Ltd., of Billingham, for the fourth extension to the water-gas and producer-gas plant which they originally installed for the latter company. The present order includes nine mechanical water-gas generators with waste heat boiler equipment, auxiliaries, and automatic control, also four mechanical producer-gas generators with auxiliary equipment, together with building for housing the plant and overhead fuel bunker. The installation, with this extension completed, will comprise twenty-one water-gas generators and eight producer-gas generators, together capable of a total gas output of 4¼ million cubic feet per hour.

Beet Sugar in Great Britain

Paper and Discussion at S.C.I. Meeting

THE London Section of the Society of Chemical Industry held its annual meeting at Burlington House on Monday. Mr. W. J. A. Butterfield was re-elected president and Dr. R. T. Colgate secretary. Following the annual meeting, an ordinary meeting was held, at which Mr. C. D. Adams, assistant general superintendent of the Anglo-Scottish Beet Sugar Corporation, read a paper on "The English Beet Sugar Industry."

Mr. Adams said that the war demonstrated forcibly the importance of producing at home a substantial proportion of our requirements of so valuable an article of food as sugar. Sugar had been long and carefully studied by scientific men. Sugar produced from beet was indistinguishable, even by laboratory methods, from cane sugar, notwithstanding a current impression that it had different properties. Early attempts to establish the industry in England failed. The first factory, built in 1870 at Lavenham, Suffolk, merely extracted and concentrated the juice, which was refined with raw cane sugar at Victoria Docks, London. The first modern factory was erected at Cantley in Norfolk in 1911, but it did not work at a profit until 1922. From that year onward the industry had grown steadily, so that during the last season or "campaign" there were 17 factories operating in England and two in Scotland.

The physical, chemical, and engineering problems and processes involved in the extraction of the sugar from beet, and its purification and crystallisation, were described, with special reference to the process and plant used at the Colwick factory in Nottinghamshire. Laboratory control was essential at every stage. The raw beet entering the factory was weighed, sampled, and its sugar content ascertained by analysis; similarly losses of sugar were checked by regular analyses of the pulp, waste waters, and lime cake discharged. It was also most important to control by analysis the alkalinity after each of the carbonation operations, and after thin juice and thick juice sulphitation. In addition all supplies to the factory, including fuel, limestone, sulphur, soda ash, and super-cel, were checked by analysis.

Discussion

In the subsequent discussion, Mr. Butterfield, after expressing his appreciation of the paper, spoke of the difficulties regarding the disposal of effluents from the factories, and mentioned the process tried by Dr. Owens at Aynsham, which did not involve such large quantities of water. Mr. A. J. V. Underwood touched on the barium process for the treatment of molasses, which had been installed at the Colwick factory. As to the future of the industry, he thought that the subsidy would hardly be sufficient to keep the industry going.

Sir William Wayland, M.P. for Canterbury, said that, speaking as a chemist, a farmer, and an M.P., he would like to know if the author believed it possible to run a beet sugar industry in this country without a subsidy. There was too much capital invested in the factories for it to be conceivable that they would be shut down, and therefore, in the absence of the subsidy, we should have to look to improved methods of working.

Mr. E. J. Silcock said his interest was in the possible pollution of streams by beet sugar factory effluents, and also the large quantities of water required. Some factories used three million to four million gallons of water a day, which was sufficient for a population of 100,000 people, whilst the effluent was extremely difficult to deal with. Experiments were being carried out by the author's company and the Board of Agriculture, and special plant had been put down to ascertain means for preventing the fouling of streams by the effluent. If the effluent could not be dealt with in a satisfactory manner it would be an extremely serious thing for some of the factories.

The Author, replying to the discussion, said he would not care to predict at the moment whether the experimental plant at Aynsham would be successful or not. The only test, of course, was commercial working, and the final cost and nature of the product was the thing that mattered. If cane sugar was pure, the trouble mentioned by Mr. Eastick would not be experienced. Personally, he was convinced that the industry would exist without a subsidy, as such, although it was probable that some form of protection by way of a duty on imported sugar would have to take its place.

Indian Chemical Notes

[From Our Indian Correspondent.]

The official report of the seaborne trade of Bengal for the year 1926-27 shows that the import trade in chemicals expanded considerably under all the main headings. The value of soda compounds increased from 38 lakhs to 47 lakhs, bleaching materials from 2½ to 3½ lakhs, carbide of calcium from 4 to 5 lakhs, and sulphur from 9 to 10½ lakhs. The imports of drugs and medicines showed some small increase. Proprietary and patent medicines have fallen off, suggesting an increased output in India. Government imports of cinchona bark and quinine salts decreased considerably, owing to increased output by the Government and plantations.

Artificial Silk

There was a large increase in the imports of artificial silk (mixed with cotton) piecegoods into Calcutta, from 3 to 10 million yards. This was mainly due to the reduced price of artificial silk yarn as a result of improved methods of production. Imports from the United Kingdom advanced to 4 million yards, and from Italy to over 5 million yards. Bombay, however, is the larger market, and imports of artificial silk yarn there increased from 2 to 5 million lbs., and of piecegoods from 10 to 25 million yards. The principal suppliers were of course the United Kingdom and Italy.

Mica

The legislative council of Bihar and Orissa has before it for consideration a bill for the regulation of mica industry, and the enhancement of the output of mica mines. The total exports of mica from Calcutta in 1926-27 amounted to 73,000 cwts., against 86,000 cwts. in the previous year. Splittings fell in quantity from 72,000 to 62,000 cwts., and block mica from 14,000 to 10,000 cwts. The principal customers were the United States of America (32,000 cwts.), and the United Kingdom (23,000 cwts.).

Protection for Glass

The manufacturers of glass in India are busy organising themselves for the protection of their industry. They recently held a very successful conference at Moradabad in the United Provinces, where delegates from all the provinces were present. Among the resolutions passed at the conference the most important was the one asking for the reduction of duty on materials and chemicals used in the glass manufacture, the introduction of special railway freights throughout India, and the protection of the indigenous industry against foreign competition.

Indian Institute of Science

According to the report of the Indian Institute of Science, Bangalore, for the past year, agricultural problems peculiar to India were the subject of particular attention at the Institute during the year. Research in diseases of plants was continued and investigation was made of the soil fungi with special reference to ammonia production. The oxidation of sulphur in suspensions of activated sludge has led to the isolation of a sulphur oxidising organism whose culture and physiological characteristics have been studied. Many soils have been examined for their iodine content in connection with work on the origin of goitre. The tests have shown a variation from nil to 400 parts of iodine per 10 million parts of the soil examined.

The Institute has given further attention to investigate the mechanism of changes produces by fungi and bacteria in tanning liquors. The work on lac has been continued in the hope of ascertaining the physiological process by which the insect produces the resin and also of studying the yeast-like organism found in the body. The question of power alcohol production is being carefully studied and various methods of estimating carbohydrates have been critically examined.

Manufacturing Caustic Soda

The Industries Department of the Mysore State has decided to make a beginning in manufacturing caustic soda and bleaching powder. Electric power is available in large quantities and at low price. The question is being considered as to whether the manufacture should be taken over by the State or should be entrusted to private enterprise. Meanwhile the Board of Industries is prepared to give concessions to private enterprise in the form of reduced rate of electric power, provision of technical advice, and the guarantee of purchase of production.

S. G. W.

Oil Wells in Great Britain

Dr. Wade on the Prospect

A highly interesting paper, entitled "The Oil Well and Later Developments at Hardstoft, Derbyshire," was read by Dr. A. Wade before the Institution of Petroleum Technologists on Tuesday.

Three drillings, said Dr. Wade, had been made at Hardstoft. The first, made under D.O.R.A. in 1919, struck oil (resembling Pennsylvanian crude), the flow of which had persisted ever since, though in decreasing quantities. Two other drillings since made at Hardstoft had proved abortive. Ten other drillings were made in various parts of Great Britain, without any real success.

Summing up, Dr. Wade said that to come to the conclusion that the first bore to be commenced under the Government scheme for the purpose of seeking for oil in England, struck the only large supply that existed, or could possibly exist, would be absurd. Such a borehole was but a pinprick on the surface of the country, and to imagine that such a pinprick discovered all that was to be found in the length and breadth of only the Northern Midlands would be to imagine a vain set of improbabilities. If his reasonings were correct, it was almost certain that more oil was to be obtained, possibly in larger quantities than those already yielded by No. 1 Hardstoft, along the same fault plane and at the same horizon. There was no reason to doubt that similar accumulations existed in favourable situations elsewhere.

Dr. Veatch, who was a petroleum geologist of the highest standing, stated that "the petroleum possibilities of the Midlands of England were of a most amazing and striking character." In spite of the failure of the Government test borings, both Veatch and Ickes thought profitable oilfield areas could be discovered. At the same time, for various reasons, Dr. Wade thought that at the present time a search for the oil (though it might exist) was by no means a commercial proposition. Some day, either when there was a dearth of fuels, or in some case of national emergency, the search for oil in England might be commenced again.

Among those who took part in a discussion on the paper were Dr. J. A. L. Henderson, Mr. E. A. Cunningham-Craig, Mr. J. L. Jeffery, of the petroleum department of the Board of Trade, Mr. Macdougall, and Mr. C. B. Roach.

De Vecchis Process in France, Belgium, and Luxemburg

A powerful group of French sugar manufacturers has acquired the patent rights for the De Vecchis process of sugar manufacture for the whole of France, Belgium, and their Colonies, and Luxemburg, and proposes to work the process in these areas. This follows a lengthy investigation of the working of the De Vecchis process at the Sanguinetto factory during the past season, where, it will be remembered, the two Scott dryers, constructed by George Scott and Son (London), Ltd., of Silvertown, and referred to in the recent paper presented at the joint meeting of the Chemical Engineering Group and the Glasgow Section of the Society of Chemical Industry in October last, were installed. The earlier De Vecchis factories in Italy, as is generally known, experienced great difficulty with the drying section of the process, but these difficulties were overcome in the dryers put down at Sanguinetto by George Scott and Son, and the cossettes produced have been found capable of easy purification and filtration on the original De Vecchis lines, giving a very satisfactory product, both as regards quality and quantities.

Behaviour of Ferrocyanides in Rubber

At a meeting of the London and District Section of the Institution of the Rubber Industry, held at the Engineers' Club, London, on Monday, Mr. J. R. Scott read a paper entitled "Note on the Behaviour of Prussian Blue and some other Ferrocyanides in Rubber." In view of the scantiness of the published information an examination of the behaviour of Prussian blue in rubber was undertaken, and extended to include Turnbull's blue and the ferrocyanides of lead and zinc, and although the investigation was still far from complete, it was thought that some account of the results obtained so far would be of interest. Thanks were recorded to the Board of Management of the British Rubber and Tyre Manufacturers and to Mr. Porritt for permission to publish the results.

Chemical Matters in Parliament

Lord Buckmaster (House of Lords, March 29) moved that a serious warning should at once be issued by the Ministry of Health as to the possibility of danger from the use of lead tetraethyl in petrol. The motion was negatived by 36 votes to 21. In answer to Lord Buckmaster, Viscount Gage stated that an inter-departmental committee, with the addition of a number of independent experts, had been set up to inquire into the use of lead tetraethyl in motor spirit. [The constitution of the committee is given elsewhere on this page.] The suggestion that a warning should be issued raised the whole question whether lead tetraethyl was as dangerous as it was made out to be. In the view of the Minister of Health the public were not running any serious risk from lead tetraethyl.

Alien Works Chemists

In answer to a question by Mr. E. Wood (House of Commons, March 29), Sir W. Joynson-Hicks stated that he regretted that no information was available regarding the number of registered aliens employed in Great Britain as works chemists or chemical engineers, their country of origin, and their employers.

Rubber Industry Bill: Second Reading

Mr. Waddington (House of Commons, March 30) moved the second reading of the Rubber Industry Bill. Mr. Waddington explained that he desired to impose a compulsory levy of one-twenty-fifth of a penny a lb. on all rubber imported and retained for manufacture in this country. The £15,000 thus raised would endow the Rubber Research Association with a sufficiency and a security for the next five years such as it had not had since its institution in 1920. Firms representing 79 per cent. of the industry numerically and 91 per cent. financially were in favour of the Bill. Upon a division the reading was passed by 104 votes to 52.

Dyestuffs Act and the Cotton Industry

In a statement on the Cotton Industry (House of Commons, April 2), Mr. T. Shaw stated some employers asked for the abolition of the Dyestuffs Act, which had affected the cotton trade adversely in foreign competition. He suggested that the Government might review its policy with regard to dyestuffs. In reply, Sir Philip Cunliffe-Lister pointed out that the Labour Government did not attempt to repeal the Dyestuffs Act when they were in office, and the present Government did not propose to repeal it now.

Lead Tetraethyl Inquiry Committee

THE constitution of the inter-departmental committee appointed to inquire into the dangers to health arising from lead tetraethyl in motor spirit has been officially announced as follows: Chairman, Sir Frederick Wills (chairman of the Board of Control); representing Ministry of Health, Sir George Buchanan; representing the Home Office, Dr. Bridge (Senior Medical Inspector of Factories); representing the Air Ministry, Mr. Tighe, Deputy Director of Scientific Research; representing the Medical Research Council, Sir Charles Martin (Director of the Lister Institute), and Sir Robert Robertson, Government Chemist; representing the War Office, Major Galway (Director of Experiments in Chemical Warfare); representing the Department of Scientific and Industrial Research, Dr. C. H. Lander (Director of Fuel Research); non-official members, Mr. A. Chaston Chapman, Sir William Wilcox, and Professor Dickson. The terms of reference are to inquire into the possible dangers to health resulting from the use of motor spirit containing lead tetraethyl or similar lead-containing compounds, and to report what precautions if any are desirable in connection with the use or handling of such motor spirit. Mr. S. F. S. Hearder has been appointed secretary. The committee will hold a preliminary meeting on Friday, April 20.

Chemical Industry Club

DURING the chemical conference to be held in London early in May under the auspices of the Society of Chemical Industry, gentlemen who are members of that Society or who are attending the conference will be allowed the privileges of temporary membership of the club. Thanks to the recently inaugurated Improvements Fund, a good start has been made in refurnishing the club rooms and in making them more comfortable and attractive. A successful "Bridge Evening" was held recently (winner, Mr. A. J. V. Underwood), and the billiards handicap is approaching the final round.

A Bookman's Column

THE latest volume in the International Chemical Series, of which Professor J. F. Norris is now consulting editor, is "Mathematical Preparation for Physical Chemistry" (McGraw-Hill Co., pp. 308, 15s.), by Dr. Farrington Davies, Associate-Professor of Chemistry in the University of Wisconsin. The aim of the author is to assist students of natural science in their struggles against the handicap of an inadequate preparation in mathematics. He frankly warns his readers that, while this work may furnish sufficient mathematical preparation for a first course in physical chemistry and even for some advanced courses, a fully prepared physical chemist requires a better foundation than the book affords.

* * *

In his capacity for scientific investigation, together with his powers of exposition, Sir William Bragg displays an almost unique combination of gifts. Both these aspects of a brilliant mind were shown in the Fison Memorial Lecture on "The Structure of an Organic Crystal," which he delivered at the Guy's Hospital Medical School recently, and which is now published in pamphlet form by Longmans, Green and Co. (pp. 32, 1s. 6d.). In the last few years the powerful weapon of X-ray analysis, formerly used only among inorganic compounds, has been brought to bear on organic compounds by Sir William and his students. The results are naturally somewhat difficult of interpretation, but already much information of considerable value has been accumulated. In the pamphlet now issued these results are outlined with great clearness and simplicity.

* * *

The amount of investigatory work now carried on throughout the world renders it difficult for any single worker to keep his subject in focus: it is a great merit of the general discussions organised by the Faraday Society that they enable workers to take more or less complete stock of various topics. The Society has just published *Cohesion and Related Problems* (pp. 180, 10s. 6d.); this contains the papers read at the general discussion on this subject held last November, together with the remarks of those who participated. The wide recognition of the value of these meetings is indicated by the international character which they now assume. For example, among the contributors to the present volume are Professor A. Joffé, director of the Physical Technical Institute and Laboratory in Leningrad; Professor M. Polanyi, of the Kaiser Wilhelm Institute for Physical Chemistry and Electrochemistry, Berlin; Professor T. W. Richards, of Harvard University; and Professor J. Erréra, of Brussels, in addition to numerous British scientists of eminence. Rounded off as it is by an index, this publication forms a very valuable contribution to our knowledge of cohesion.

* * *

A book which should arouse a good deal of interest among technical men has been published by the Chemical Catalog Co., namely, *Lubricating Greases*, by E. N. Klemgard (pp. 198, $5.50). A large amount of practical and scientific data are given with regard to the manufacture and use of lubricating greases, including chemical analyses of many commercial lubricants, abstracts of important patents, and formulæ and practical processes for the manufacture of greases. The author deals with cup greases, soda base greases, mixed soda lime base greases, sett greases, lead base greases, miscellaneous greases, and compounded oils and mechanical mixtures. In the final chapter, the trend of modern research on the subject is considered. The manifold uses of such a book are obvious.

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The series of "Monographs on Inorganic and Physical Chemistry," edited by Professor Alexander Findlay, and published by Longmans, Green and Co., has just received an addition in the form of a volume entitled *Chemical Affinity*, by L. J. Hudleston (pp. 138, 7s. 6d.). The author states in his preface that the book is mainly devoted to develop that aspect of the subject concerned with the use of thermal and equilibrium data to assist in the design and control of new problems of reaction. The subject is discussed under the following chapter headings: Energy and Its Transformations; Entropy; Free Energy; Solutions; and the Nernst Heat Theorem and the Third Law of Thermodynamics. Finally there is a chapter on the applications of the theorems and equations developed.

From Week to Week

SWISS EXPORTS OF CHEMICALS in January amounted in value to 12 million francs.

MR. A. E. DOHERTY has been appointed chemist and metallurgist to the Egyptian Government.

MR. H. V. CASTLE has been appointed travelling representative in Wales for the Ammunition Sales Department of Imperial Chemical Industries, Ltd.

MR. THOMAS BRITTEN, late general manager of Crompton and Co., Ltd., and director of Crompton, Parkinson, Ltd., has joined the board of the Buell Combustion Co., Ltd.

A LLANELLY TINWORKER, Sidney Hopkins, aged 32, died in hospital on Saturday from burns received by falling into a tank of sulphuric acid at the works where he was employed.

PROFESSOR F. M. ROWE, of Leeds University, lectured on "Azoic Colours" to members of the Society of Dyers and Colourists at Nottingham University College, on Thursday, March 29.

MR. H. TALBOT has been nominated as the representative of the Society of British Gas Industries at the International Illumination Conference, to be held in the United States in September.

MR. NORMAN TAYLOR, for the past five years manager at the Modderfontein Dynamite Factory of African Explosives Industries, Ltd., will shortly take over the management of Nobel's Factory at Deerpark, Australia.

SIR ALFRED MOND presided at a luncheon given by the Buxton Lime Firms Co., Ltd., at the Palace Hotel, Buxton, on Saturday, March 31, and afterwards witnessed the semi-finals and finals of the inter-works boxing competition.

THE YORKSHIRE TAR DISTILLERS, LTD., state that as from April 2 the registered address of the company has been Quebec House, Leeds. The telephone numbers remain the same (Leeds 29577-8-9 and 29580). The telegraphic address is "Yotar, Leeds."

THE ENGAGEMENTS ARE ANNOUNCED of Mr. Harry Wilson McGowan, elder son of Sir Harry and Lady McGowan, to Miss Jean Stella Ferguson; and of Mr. D'Arcy M. Stephens to Miss Isobel McGowan, Sir Harry and Lady McGowan's elder daughter.

MR. L. T. DAVIES, for many years chief research chemist at the Bargoed by-product works of the Powell Duffryn Co., has been appointed representative for Scotland, North of England, and the Midlands of the Monolithic and General Constructions, Ltd., and the Coke and Gas Ovens, Ltd., London.

LONG SERVICE AWARDS were made to employees of Brunner, Mond and Co., Ltd., by Sir Alfred Mond at Winnington, near Northwich, on Saturday evening, March 31. The recipients were drawn from the firm's works at Winnington, Lostock, Middlewich, Sandbach and Silvertown, and there were 51 awards for 40 years, 95 awards for 35 years, and 167 awards for 25 years' continuous service.

THE FEDERATION OF BRITISH INDUSTRIES is taking action to safeguard the interests of British manufacturers trading with Egypt in the contemplated revision of the Egyptian tariff. The Federation has recently established an office in Egypt directed by M. Lafontaine, and has been considering the steps necessary to ensure that due consideration is given to the British point of view by the Egyptian Government.

MR. H. C. PARMELEE, editor of *Chemical and Metallurgical Engineering*, New York, and secretary of the American Institute of Chemical Engineers, expects to arrive at Liverpool on the White Star liner *Cedric* on Sunday, April 15, and, after a tour in the North of England, to reach London on April 29 for a week's stay. His visit will afford an opportunity to the British chemical engineers of discussing the details of their tour through Canada, which the American chemical engineers are organising.

UNIVERSITY NEWS.—*London:* The degree of D.Sc. in biochemistry has been conferred on Mr. F. W. Fox (Imperial College, Royal College of Science) for a thesis entitled "Some Studies in Sterol Metabolism," and the degree of D.Sc. in chemistry on Mr. R. W. E. B. Harman (University College) for a thesis on "Aqueous Solutions of Sodium Silicate."—*Sydney:* Dr. J. C. Earl has been appointed to the chair of organic chemistry in succession to Professor Kenner. —*St. Andrews:* The Senatus Academicus has resolved to confer the honorary degree of LL.D. upon Professor E. P. Cathcart, Gardiner Professor of Physiological Chemistry, University of Glasgow.

ARTIFICIAL SILK NEWS.—An issue was made on Monday by the British Acetate Silk Corporation, Ltd., of 1,400,000 £1 ordinary shares and 700,000 1s. deferred shares. The company has been formed to take over the Bulmer Rayon Co., Ltd., which has a factory already in production at Stowmarket. Production is estimated at 11 tons of viscose and one ton of acetate silk per week. The directors include Sir W. Edge, director of William Edge and Sons, Ltd., and Sir W. Bulmer. The technical consultant is Dr. Arthur Eichengrun, of Berlin, and the consulting engineer is Mr. R. J. Marx, M.I.Chem.E. Sir W. Bulmer states that the works have come to the end of experimental troubles, and can produce artificial silk filaments as fine as, or finer than, the real article.

PROFESSOR E. C. WILLIAMS will sail on April 11 by the *Majestic* to take up his new appointment in California.

RECENT WILLS INCLUDE: Mr. James Bruce Adam, Edinburgh, chairman of Craig and Rose, Ltd., paint manufacturers, £42,913.

COLONEL SIR E. A. BROTHERTON has subscribed £100 towards the cost of the Easter pilgrimage of the Leeds Pals' Association to the battlefields.

THE ENGAGEMENT IS ANNOUNCED of Mr. Harold W. Gill, general manager of the Magadi Soda Co., Ltd., Lake Magadi, to Miss M. Chambers, of Nairobi.

THE NEWCASTLE BENZOLE CO., which has works at Blaydon-on-Tyne, and depots at Sunderland and Carlisle, has transferred its business to the National Benzole Co., Ltd., London.

VICKERS-AMSTRONG, LTD., have secured an order from the Bombay Port Trust for a ship-shape caisson for the communication passage between Prince's and Victoria Docks, Bombay.

A CONTRACT FOR 7,500,000 BRICKS required in the construction of 500 houses at the works of Synthetic Ammonia and Nitrates at Billingham, has been secured by Bolckow, Vaughan and Co.

THE ARTIFICIAL SILK EXHIBITION, it is stated, is to be held during the period of the 1929 British Industries Fair at the White City. The artificial silk exhibits will be housed in a special building, but visitors to the Fair will be given access to it.

EGYPTIAN IMPORTS OF CHEMICALS, medicinal products and perfumery in 1927 were valued at £E.3,538,281, and exports at £E.301,797. Dyestuffs, colours and tanning materials were imported to the value of £E.369,723, and exports were valued at £E26,122.

SIR ALFRED MOND has been awarded the Gold Medal of the Institution of Mining and Metallurgy, "in recognition of his scientific and industrial services in the development of the minerals resources and metallurgical industries of the British Empire." The medal will be presented at a meeting of the Institution on May 17.

AT THE MARCH MEETING of the Electroplaters' and Depositors' Technical Society, held jointly with the London Section of the Institute of Metals, Mr. D. J. MacNaughton, of the Research Department, Woolwich, read a paper on "Common Defects in Nickel Deposits." Dr. R. S. Hutton, director of the British Non-Ferrous Metals Research Association, presided over a large attendance.

A MEETING OF MEMBERS of the Research Association of the British Paint, Colour, and Varnish Manufacturers will be held at the Paint Research Station, Waldegrave Road, Teddington, on Wednesday, April 18. The laboratories will be open for inspection from 11.30 a.m. onwards. An address on "Cellulose Lacquers" will be given by Mr. R. A. Coolahan at 2.30 p.m. Illustrations will be given by a film entitled "Modern Lacquers."

THE REPORT OF THE STANDING COMMITTEE appointed under the Merchandise Marks Acts on imported glue and gelatine has been issued. The committee consider that an Order in Council should be made and recommend that the Order in Council should require that any box, bag, keg, bale, bottle, or other container or wrapper in which imported glue (including glue size) and gelatine are sold, or exposed for sale, should bear an indication of origin printed or stamped, stencilled or painted, or branded in a conspicuous manner.

SALES OF NITRATE OF SODA reported by the Producers' Association during the fortnight ended March 15 amounted to 55,750 metric tons for shipment up to June, 1928, and to 46,369 metric tons for delivery in the 1928–29 nitrate year. Total sales of the fertiliser since the introduction of free selling on April 14, 1927, up to March 15, 1928, were 3,078,148 metric tons (including 232,336 tons disposed of for delivery in 1928–29). It is understood that further sales of the fertiliser have been effected during the past fortnight at prices ranging from 16s. 6d. to 16s. 9½d. per metric quintal, according to delivery dates.

POINTS OF INTEREST IN THE CHEMISTRY of brewing were referred to at the annual meeting and dinner of the Yorkshire and North-Eastern Section of the Institute of Brewing at Leeds on Thursday, March 29. Replying to the toast of the "Institute of Brewing," Mr. R. J. B. Storey, the president, said that they were carrying out much research work, and for the last seven years their chemists had been endeavouring to separate the various constituents of the hop on which its preservative qualities depended. He was glad to say that the results so far obtained had added considerably to their knowledge of the hop. Other chemists were evolving methods for the evaluation of both barley and hops by analysis as against the hand and eye methods which had obtained for centuries.

Obituary

SIR ALEXANDER RICHARDSON, formerly editor of *Engineering*, on Friday, March 31, aged 65.

PROFESSOR THEODOR ZINCKE, the eminent German chemist, at Marburg, on March 17, aged 84. From 1875 till his retirement in 1913 he was professor at the University of Marburg. Alone and together with numerous students he published a large number of papers, mainly on the chemistry of aromatic compounds, including work on the quinones, on the action of halogens and nitric acid on phenols, cresols, etc., on pseudo-compounds, mercaptans, etc.

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ORGANIC.—The action of bromine on formaldehyde. F. E. C. Scheffer and N. B. van Went. *Recueil Travaux Chim. Pays-Bas*, March 15, pp. 406–414 (in French).

The reaction between the ethylenic linkage and organo-magnesium halides. H. Gilman and J. H. McGlumphy. *Recueil Travaux Chim. Pays-Bas*, March 15, pp. 418–422 (in English).

The preparation and properties of hexanitrodiethydiphenylurea. L. Desvergnes. *Revue Chim. Ind.*, February, pp. 41–42 (in French).

A study of the addition of gaseous hydrogen chloride and hydrogen bromide to ethylene and propylene and the influence of catalysts. J. P. Wibaut, J. J. Diekmann, and A. J. Rutgers. *Recueil Travaux Chim. Pays-Bas*, March 15, pp. 477–495 (in English).

The catalytic hydrogenation under pressure of *p*-hydroxytriphenylcarbinol and of β-hydroxydiphenylmethane. W. Ipatiew and B. Dodgoff. *Bulletin Société Chim. France*, February, pp. 242–248 (in French).

The catalytic hydrogenation of oximes and their transformation into β-hydroxylamines. G. Vavon and Krajcinovic. *Bulletin Société Chim. France*, February, pp. 231–237 (in French).

Researches on the direct introduction of substituents into aromatic mercaptans. T. van Hove. *Bulletin Soc. Chim. Belgique*, February, pp. 88–102 (in French).

Patent Literature

The following information is prepared from published Patent Specifications and from the Illustrated Official Journal (Patents) by permission of the Controller to H.M. Stationery Office. Printed copies of full Patent Specifications accepted may be obtained from the Patent Office, 25, Southampton Buildings, London, W.C.2, at 1s. each.

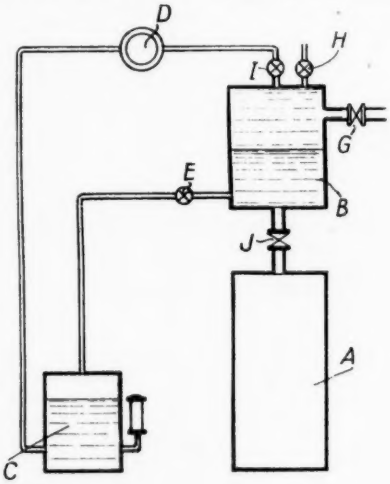
Abstracts of Complete Specifications

286,323. DYESTUFFS, MANUFACTURE OF. R. F. Thomson, J. Thomas, and Scottish Dyes, Ltd., Earl's Road, Grangemouth, Stirling. Application date, September 24, 1926.

Halogenated dibenzanthrones obtained according to the process described in Specification No. 278,834 (see THE CHEMICAL AGE, Vol. XVII, p. 466) and halogenated at least to the dichlor stage are condensed with glycols. In an example, a dibenzanthronyl body is first made and converted into a dibenzanthrone, and then to a dichlor-dibenzanthrone. The latter is treated in nitrobenzene with ethylene glycol in the presence of an alkali carbonate and a metal such as copper bronze. The product finally obtained is substantially free from halogen, and has the properties of an ethylene ether of dibenzanthrone. Other examples are given in which trimethylene glycol and glycerol are employed for the condensation.

286,324. INTRODUCING SEMI-LIQUID MATERIALS INTO HIGH PRESSURE VESSELS, METHOD OF. Synthetic Ammonia and Nitrates, Ltd., and H. A. Humphrey, Billingham, Stockton-on-Tees, Durham. Application date, September 27, 1926

A mixture of liquid and solid which is to be introduced into a high pressure vessel at a pressure of 100 atmospheres or more is displaced by means of a liquid which is independent of, and does not mix with, the material to be treated. The auxiliary liquid may be oil, which is stored in a reservoir C and may be pumped into a chamber B by means of a pump D. Oil can be returned to the reservoir C by opening the valve E. The charge of material is first admitted through the valve G to the

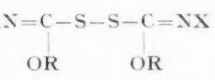


286,324

chamber B, and the valve G is then closed and valve I opened to admit oil to the space above the charge, while air escapes through valve H. The pump D is then operated to place the oil under pressure, and valve J opened to admit the charge to the high pressure reaction chamber A. Valves I, J are finally closed and valve E opened to return the oil to the reservoir C. A modification is described in which a loose differential piston is employed to force the charge into the reaction vessel.

286,331–2. CARBOHYDRATE DERIVATIVES, MANUFACTURE OF. W. Harrison, 856, Stockport Road, Longsight, Manchester. Application date, October 30, 1926.

286,331. The object is to obtain stable or permanent carbohydrate compounds containing combined nitrogen in the form of an amido or imido group or one or other of the nitric groups. A compound of cellulose, starch, or other carbohydrate of a colloidal nature containing the CSS group, mixed with ammonia or any of its derivatives containing no organic substituents, is subjected to an oxidising agent in alkaline, neutral, or faintly acid solution. The compounds formed are carbohydrate derivatives of di-imido carboxylic di-sulphide



where R represents a residue of cellulose, starch, or other colloidal carbohydrate, and X represents H, OH, or another inorganic substituent. Examples are given of the treatment of viscose, cellulose dixanthogenate, etc., with various oxidising agents.

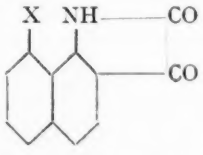
286,332. These derivatives are obtained by subjecting to an oxidising action a mixture of the compound or compounds formed on mixing a colloidal carbohydrate compound containing the CSS group and an organic compound derived from ammonia in which at least one hydrogen atom is free. This includes alkyl amines, aryl amines, aralkyl amines, aryl-alkyl amines, substituted hydroxyl-amines, acid amines, such as acetamide, benzamide, phthalimide, amino acids, such as amino acetic acid, amidines, urea, and its derivatives, cyanamide, dicyano diamide, dicyanimide, guanidine, and its derivatives, urethanes, thiourea, and its derivatives. A number of examples are given.

286,358. ISATINS OF THE NAPHTHALENE SERIES, MANUFACTURE OF. W. Carpmael. From I.G. Farbenindustrie Akt.-Ges., Frankfurt-on-Main, Germany. Application date, December 1, 1926.

Isatins of the naphthalene series are obtained by condensing an oxaminic acid halogenide of a primary amine of the naphthalene series or a substitution product with an acid condensing agent such as aluminium or ferric chlorides. The oxaminic halogenides of naphthylamines can be obtained in an analogous manner to the preparation of the oxaminic acid chloride of aniline (Berichte 23, 1823 (1890)). Examples are given of the condensation of α-naphthyl-oxaminic acid chloride, β-naphthyl-oxaminic acid chloride, and the corresponding compounds of naphthylamines substituted in the nucleus.

286,359. INDIGOID DYESTUFFS, MANUFACTURE OF. W. Carpmael, London. From I.G. Farbenindustrie Akt.-Ges., Frankfurt-on-Main, Germany. Application date, December 1, 1926.

These dyestuffs are obtained by condensing 1 : 2-naphthisatins halogenated in the peri position to the imino group with the usual components. Isatins of the constitution



in which X denotes a halogen, and which may contain other substituents such as Cl, Br, NO_2, yield violet to black dyestuffs of great fastness, according to whether they are applied as isatins themselves or in the form of their α-substitution products with the usual components, *e.g.*, oxythionaphthene, oxindol, indoxyl, acenaphthenone, α-anthrol, α-naphthol, α-oxyanthranol, carbazol, etc. Examples are given of dyestuffs obtained from 8-chloro 1 : 2-naphthisatin, 5 : 8-dichloro-1 : 2-naphthisatin, and 8-chloro-4-bromo- 1 : 2-naphthisatin. These isatins are described in Specification No. 286,358 above. The dyestuffs may be further halogenated.

286,456. HIGH GRADE PRODUCTS FROM RAW COAL, PROCESS OF OBTAINING. Chemische Fabrik in Billwarder vorm. Heil und Sthamer A.G., and F. L. Kühlwein, 28, Billbrookdeich, Hamburg, Billbrook, Germany. Application date, March 5, 1927.

Coal has been treated by a froth flotation process in which an alkali xanthate is added to the usual froth flotation reagents,

e.g., cresol and/or hydrocarbon oil. It is now found that substantially better results are obtained by the addition of xanthogenate in weakly alkaline or alkaline earth solution in the absence of the usual frothing or froth flotation agents.

NOTE.—Abstracts of the following specifications which are now accepted, appeared in THE CHEMICAL AGE when they became open to inspection under the International Convention: 263,117 (H. T. Bohme Akt.-Ges.), relating to sulphonation of fatty acids and their esters, see Vol. XVI, p. 190; 263,119, 263,120, and 265,550 (New Jersey Zinc Co.), relating to lithopone, see Vol. XVI, pp. 190 and 381; 265,985 (I.G. Farbenindustrie Akt.-Ges.), relating to solid diazo salts, see Vol. XVI, p. 382; 266,388 and 269,582 (I.G. Farbenindustrie Akt.-Ges.), relating to diazo sulphamic acids of the cyclic series, see Vol. XVI, p. 448 and Vol. XVII, p. 13; 268,749 (Commercial Solvents Corporation), relating to acetone and butyl alcohol by fermentation, see Vol. XVI, p. 558; 272,923 (Consortium für Elektrochemische Industrie Ges.), relating to acetic anhydride, see Vol. XVII, p. 200; 274,072 (G. Carteret), relating to white titanium pigments, see Vol. XVII, p. 261; 275,580 (Titan Co. Aktieselskabet), relating to utilisation of titanium materials containing iron, see Vol. XVII, p. 331; 277,640 (Metallbank und Metallurgische Ges. Akt.-Ges.), relating to aluminium and aluminium alloys, see Vol. XVII, p. 47 (Metallurgical Section); 279,429 (I.G. Farbenindustrie Akt.-Ges.), relating to azo dyestuffs and chromium compounds, see Vol. XVII, p. 579; 281,227 (Newport Co.), relating to para-hydroxy-ortho-benzoyl-benzoic acid, see Vol. XVIII, p. 85; 282,347 (I.G. Farbenindustrie Akt.Ges.), relating to dihydroxy-acetone, see Vol. XVIII, p. 150.

International Specifications not yet Accepted

284,322. AMMONIUM PHOSPHATE. American Cyanamid Co., 535, 5th Avenue, New York, U.S.A. (Assignees of G. H. Buchanan, Westfield, New Jersey, U.S.A.) International Convention date, January 28, 1927.

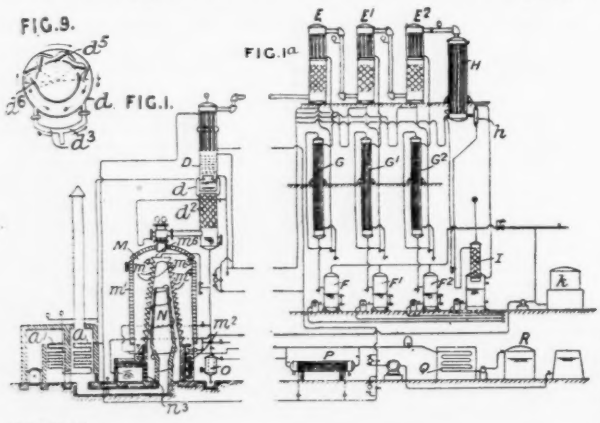
Solid mono-ammonium phosphate is treated in a dry state in a steam jacketed vessel with ammonia at pressures up to 60 lb. per square inch and temperature of 60° C. to 150° C. The mass is stirred for some time after the ammonia supply is cut off, and the vessel is then subjected to reduced pressure to remove free ammonia and also that combined as tri-ammonium phosphate, leaving di-ammonium phosphate, which is used as a fertiliser.

284,327. FULLER'S EARTH. R. R. Rosenbaum, 601, West 53rd Street, Chicago, U.S.A. International Convention date, January 29, 1927.

Adsorbents such as Fuller's earth are activated or regenerated by treating with steam to remove any adsorbed oil, and then with liquid sulphur dioxide in the filter in which they are used in the purification of hydrocarbons, oils, or waxes.

284,345. CRACKING AND HYDROGENATING OILS. H. Carroll, 5, Rue Victorien Sardou, Paris. International Convention date, January 28, 1927.

Crude oil is heated in coils *a*, a^1 to a temperature slightly below cracking point and the vapour separated in a dephlegmator D. The liquid passes to a cracking chamber M, and the cracked vapour passes through the dephlegmator D, from which the mixed vapours pass to a series of condenser dephlegmators E, E^1, E^2, coolers G, G^1, G^2, and collecting vessels F, F^1, F^2. The vapour passes to a further tubular condenser H, from which non-condensable gases pass to a scrubber I and reservoir *k*. The oil is admitted to the central chamber *d* of the dephlegmator D through nozzles d^3 so that it impinges against vanes d^5, d^6, which cause a mechanical cracking. The cracking chamber M is supported on the setting m^2 of the furnace, and contains a hollow metal cone m^3 carrying annular troughs m^4 filled with fusible metal. The oil from chamber d^2 is caused to descend in succession over the fusible metal baths, on which it is cracked. The cone m^3 is heated by the combustion of the residual gases, which are finally withdrawn through a chimney N. The residual oil is drawn off through a filter O, heat exchanger P, and refrigerator Q to a tank R.



284,348-9. SYNTHETIC RESINS, PAINTS, VARNISHES. British Thomson-Houston Co., Ltd., Crown House, Aldwych, London. (Assignees of R. H. Kienle, 405, Altamont Avenue, Schenectady, and L. V. Adams, 38, Haigh Avenue, Schenectady, New York.) International Convention date, January 29, 1927.

284,348. The resins of the polyhydric alcohol-polybasic acid class are dissolved in solvents such as acetone, alcohol-benzol, glycol diacetate, ethyl lactate, dibutyl phthalate, diethyl phthalate, or benzyl acetate, and treated with an alkaline substance such as unslaked lime, soda ash, soda lime, or barium hydroxide, to neutralise free acid, and basic pigments such as zinc oxide, titanium oxide, or basic lead carbonate or neutral pigments are then added.

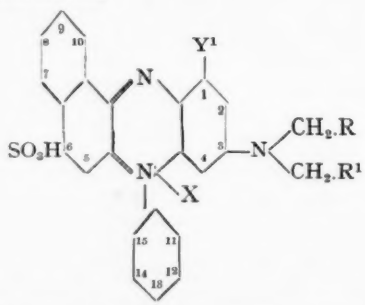
284,349. In the manufacture of resins of the glycerol-phthalic anhydride type, the reaction mixture contains also an unsaturated oxidisable fatty acid, particularly an acid from a drying oil such as linoleic acid. Acids from drying oils such as china wood, linseed, or perilla oil may be used. The products are soluble in acetone, acetone-benzene, coal tar oil, acetone oil, butyl acetate, butyl alcohol, ethyl lactate, glycol, glycol diacetate, glycol derivatives such as the mono-ethyl-ether, benzyl acetate, triacetate, and phthalic esters. The solutions are employed as varnishes.

284,608. TREATING RUBBER LATEX. Soc. Italiana Pirelli and U. Pestalozza, 21, Via Fabio Filzi, Milan, Italy. International Convention date, January 31, 1927.

Latex is treated below 20° C. with a small proportion of a solution or suspension of a salt of a di- or tri-valent metal. No thickening occurs, but on heating to 95°-97° C. rapid coagulation takes place. The product is tougher if agitated during coagulation. The process is applicable to the making of moulded articles by dipping heated formers into the treated latex, or by other methods.

284,614–5. DYES. J. R. Geigy Akt.-Ges., 51, Riehenring, Basle, Switzerland. International Convention date, January 31, 1927. Additions to 265,986.

284,614. Phenonaphtho-safranines are produced according to the process described in Specification 265,986 (see THE CHEMICAL AGE, Vol. XVI, p. 382) by the use of isorosindulines of the general formula



in which R and R^1 represent hydrogen or an alkyl or aryl group, Y^1 a halogen, and X an acid residue, there being also at least a second sulphonic group present. The positions 4, 8, 9 and 11 to 15 may be substituted by alkyl, oxy, alkyloxy, carboxy, acidylamino, or sulpho groups, or halogen. In an example, 3^1-sulphophenyl-2-naphthylamine is coupled with nitroso-*m*-chlor-diethylaniline to obtain 1-chlor-3-diethyl-isorosinduline which may then be converted into the 6 : 12-

disulphonic acid. The latter is coupled with 1-methyl-2-ethylanimo-5-aminobenzene-4-sulphonic acid to obtain the safranine.

284,615. An isorosinduline having no acid substituents in the 1, 2, and 4 positions is used for producing phenonaphtho-safranines according to the process described in Specification 265,986. An example is given.

284,644. Synthetic Drugs. W., K., L., W., and F. Merck, Darmstadt, Germany. International Convention date, February 2, 1927.

1-phenyl-1-oxo-2-bromopropane is treated with methylamine in aqueous solution, with or without benzene, to obtain 1-phenyl-1-oxo-2-methylamino-propane, which is precipitated as the hydrochloride by gaseous hydrochloric acid and then reduced to obtain 1-phenyl-2-methylamino-propanol-1.

284,655. Hydrogenating Hydrocarbons, etc. F. J. M. Hansen, 63, Alte Landstrasse, Küsnacht, near Zurich, Switzerland. International Convention date, February 2, 1927.

Hydrocarbons or carbon can be hydrogenated by the action of an electric arc or sparks from a condenser discharge between electrodes in a solvent for the products. One of the electrodes may be of nickel, and may be formed with a quartz sleeve for the passage of hydrogen. Examples are given of the hydrogenation of naphthalene, water gas, and coal.

284,656. Dyes. Soc. of Chemical Industry in Basle, Switzerland. International Convention date, February 2, 1927. Addition to 262,774.

Specification 262,774 (see The Chemical Age, Vol. XVI, p. 189) describes the production of dyes by treating violanthrone with chlorine at a temperature above 80° C. In this invention, halogenated violanthrones are employed, but not those obtained by halogenating violanthrone in chlorsulphonic acid or by means of ferric chloride or antimony pentachloride. Examples are given.

284,703. Distilling Tar. Barrett Co., 40, Rector Street, New York. (Assignees of S. P. Miller, Trenafly, N.J., U.S.A.) International Convention date, February 5, 1927.

A battery of coke ovens 5 is connected by goose-neck up-take pipes 6 to a main 7, and thence to a cross-over main 9. Tar is injected by nozzles 15, 16, into the main 7, and is agitated by paddles 11. The gases passing through main 9 are sprayed with ammonia through nozzles 21, and then pass to the condensers. The hot gas in the main 7 is hot enough to distil the

FIG.1

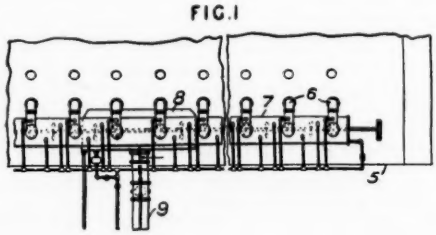


FIG.3.

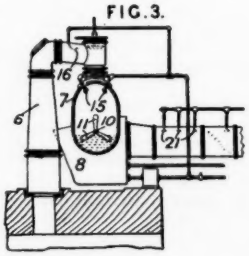
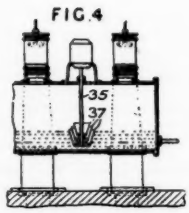


FIG.4



284,703

tar. Alternatively, the tar in the main 7 may be agitated by cones or discs 37 mounted on rotating shafts 35.

284,661. Alumina. Z. H. R. Kenkyujo, 31, Kamifuji-maecho, Komagome, Hongo-ku, Tokyo. (Assignees of T. Suzuki, 57, Hayashi-cho, Koishikawa-ku, Tokyo, H. Tanaka, 10, Nishikata-machi, Hongo-ku, Tokyo, and T. Kurita, 170, Aoyama Harazyuku, Sendagaya-machi, Toyotama-goni, Tokyo Prefecture.) International Convention date, February 3, 1927.

Alumina containing silicon, iron, ferro-silicon, or oxides of iron, is treated with chlorine or hydrochloric acid gas at a temperature above 200° C., in the presence of reducing agents. Silicon and iron are removed as the volatile chlorides, and pure alumina is obtained.

284,685. Preventing Corrosion of Copper Apparatus. Soc. Chimique des Usines du Rhône, 21, Rue Jean Goujon, Paris. International Convention date, February 4, 1927.

Copper apparatus employed in the concentration of acetic acid is protected from corrosion by first passing the acid over iron turnings to remove cupric acetate and dissolved oxygen, and a layer of oil is then placed on the surface. The ether employed in the extraction is also freed from oxygen and an oxygen-free gas fills the apparatus.

Specifications Accepted with Date of Application

262,819, 266,382, 273,656. Vat dyestuffs. I.G. Farbenindustrie Akt. Ges. December 14, 1925, February 20, and July 1, 1926.

263,163. Polycyclic compounds containing a carbonyl group, Manufacture of. I.G. Farbenindustrie Akt.-Ges. December 15, 1925.

263,178. Condensation products of the anthraquinone series, Manufactures of. I.G. Farbenindustrie Akt.-Ges. December 17, 1925.

267,163. Ortho-amino-aldehydes and ortho-amino-ketones of the anthraquinone series, Manufacture of. I.G. Farbenindustrie Akt.-Ges. March 8, 1926.

267,164. Ortho-amino-carboxylic acids of the anthraquinone series and substitution products thereof. I.G. Farbenindustrie Akt.-Ges. March 8, 1926.

268,289. Cellulose esters, Manufacture of. I.G. Farbenindustrie Akt.-Ges. March 24, 1926.

271,818. Vanillin, Processes of manufacturing. R. H. Bots and Soc. Anon. Produits Chimiques Coverlin. May 25, 1926.

271,819. Iso-eugenol, Processes of manufacturing. R. H. Bots and Soc. Anon. Produits Chimiques Coverlin. May 25, 1926.

274,465. High value oils from raw coal by low temperature distillation and hydrogenation, Method of producing. R. Feige. July 16, 1926.

276,014. Mineral-acid-free synthetic tanning agents, Process of preparing. J. R. Geigy Akt.-Ges. August 16, 1926.

276,677. Complex gold nucleic acid compounds, Manufacture of Soc. of Chemical Industry in Basle. August 25, 1926.

277,285. 3 : 4-diamino-benzoyl-*o*-benzoic acids, and process of making the same. Newport Co. September 13, 1926.

278,325. Dyestuffs, Process for manufacturing. F. Bensa. October 2, 1926.

284,198. Flotation processes. D. Guggenheim, M. Guggenheim, S. R. Guggenheim, S. Guggenheim, J. K. Macgowan, and E. A. C. Smith (trading as Guggenheim Bros.). January 24, 1927.

284,208. Sulphuric acid, Manufacture of. Soc. Generale Metallurgique de Hoboken. January 24, 1927.

287,207. Treating ores to extract metallic values. F. Dietzsch. December 8, 1926.

287,226. Phenol from waste water containing ammonia, Process for the recovery of. F. Raschig. December 15, 1926.

287,232. Trisazo dystuffs, Manufacture of. K. Carpmael and K. S. Carpmael. (*I.G. Farbenindustrie Akt.-Ges.*) December 16, 1926. Addition to 248,230.

287,236. Alloys. W. S. Smith, H. J. Garnett, and J. A. Holden. December 17, 1926.

287,281. Hydrogen peroxide, Manufacture of. A. E. Vidal. (*J. D. Riedel Akt.-Ges.*) February 4, 1927.

287,344. Cracking hydrocarbon oil. R. T. Pollock. April 29, 1927.

287,360. Recovering light metals from scrap. I.G. Farbenindustrie Akt.-Ges., and A. Beck. June 13, 1927. Addition to 182,948 and 219,287.

287,369. Alloys, Manufacture of. A. Corradini and Soc. Metallurgica. G. Corradini. July 1, 1927.

287,401. Vanadic acid, Preparation of. H. G. C. Fairweather. (*Seldon Co.*) September 14, 1927.

287,424. Dissociating zirconium ores. Rhenania Kunheim Verein Chemischer Fabriken Akt.-Ges. November 2, 1927. Addition to 282,023.

Weekly Prices of British Chemical Products

The prices and comments given below respecting British chemical products are based on direct information supplied by the British manufacturers concerned. Unless otherwise qualified, the figures quoted apply to fair quantities, net and naked at makers' works.

General Heavy Chemicals

ACID ACETIC, 40% TECH.—£19 per ton.

ACID BORIC, COMMERCIAL.—Crystal, £30 per ton; powder, £32 per ton; extra fine powder, £34 per ton.

ACID HYDROCHLORIC.—3s. 9d. to 6s. per carboy d/d, according to purity strength, and locality.

ACID NITRIC, 80° Tw.—£21 10s. to £27 per ton, makers' works, according to district and quality.

ACID SULPHURIC.—Average National prices f.o.r. makers' works, with slight variations up and down owing to local considerations; 140° Tw., Crude Acid, 60s. per ton. 168° Tw., Arsenical, £5 10s. per ton. 168° Tw., Non-arsenical, £6 15s. per ton.

AMMONIA ALKALI.—£6 15s. per ton f.o.r. Special terms for contracts.

BISULPHITE OF LIME.—£7 10s. per ton, f.o.r. London, packages extra.

BLEACHING POWDER.—Spot, £9 10s. per ton d/d; Contract, £8 10s. per ton d/d, 4-ton lots.

BORAX, COMMERCIAL.—Crystals, £19 10s. to £20 per ton; granulated, £19 per ton; powder, £21 per ton. (Packed in 2-cwt. bags, carriage paid any station in Great Britain.)

CALCIUM CHLORIDE (SOLID).—£5 to £5 5s. per ton d/d carr. paid.

COPPER SULPHATE.—£25 to £25 10s. per ton.

METHYLATED SPIRIT 61 O.P.—Industrial, 1s. 6d. to 2s. 11d. per gall.; pyridinised industrial, 1s. 8d. to 2s. 1d. per gall.; mineralised, 2s. 7d. to 2s. 11d. per gall.; 64 O.P., 1d. extra in all cases.

NICKEL SULPHATE.—£38 per ton d/d.

NICKEL AMMONIA SULPHATE.—£38 per ton d/d.

POTASH CAUSTIC.—£30 to £33 per ton.

POTASSIUM BICHROMATE.—4½d. per lb.

POTASSIUM CHLORATE.—3⅞d. per lb., ex wharf, London, in cwt. kegs.

SALAMMONIAC.—£45 to £50 per ton d/d. Chloride of ammonia, £37 to £45 per ton, carr. paid.

SALT CAKE.—£3 15s. to £4 per ton d/d. In bulk.

SODA CAUSTIC, SOLID.—Spot lots delivered, £15 2s. 6d. to £18 per ton, according to strength; 20s. less for contracts.

SODA CRYSTALS.—£5 to £5 5s. per ton, ex railway depots or ports.

SODIUM ACETATE 97/98%.—£21 per ton.

SODIUM BICARBONATE.—£10 10s. per ton, carr. paid.

SODIUM BICHROMATE.—3½d. per lb.

SODIUM BISULPHITE POWDER, 60/62%.—£17 10s. per ton delivered for home market, 1-cwt. drums included; £15 10s. f.o.r. London.

SODIUM CHLORATE.—2¾d. per lb.

SODIUM NITRITE, 100% BASIS.—£27 per ton d/d.

SODIUM PHOSPHATE.—£14 per ton, f.o.b. London, casks free.

SODIUM SULPHATE (GLAUBER SALTS).—£3 12s. 6d. per ton.

SODIUM SULPHIDE CONC. SOLID, 60/65.—£13 5s. per ton d/d. Contract, £13. Carr. paid.

SODIUM SULPHIDE CRYSTALS.—Spot, £8 12s. 6d. per ton d/d. Contract, £8 10s. Carr. paid.

SODIUM SULPHITE, PEA CRYSTALS.—£14 per ton f.o.b. London, 1-cwt. kegs included.

Coal Tar Products

ACID CARBOLIC CRYSTALS.—6½d. to 7¾d. per lb. Crude 60's, 2s. 3d. to 2s. 4d. per gall. prompt.

ACID CRESYLIC 99/100.—3s. per gall. 97/99.—2s. 7d. to 2s. 10d. per gall. Pale, 95%, 2s. 5d. to 2s. 7½d. per gall. Dark, 95%, 2s. 2d. to 2s. 4d.

ANTHRACENE.—A quality, 2½d. per unit.. 40%, £5 per ton.

ANTHRACENE OIL, STRAINED.—8d. to 8½d. per gall. Unstrained, 7¾d. to 8d. per gall.

BENZOLE.—Prices at works; Crude, 8d. to 8½d. per gall.; Standard Motor, 1s. 0½d. to 1s. 1d. per gall.; 90%, 1s. 1½d. to 1s. 3d per gall.; Pure, 1s. 5d. to 1s. 6d. per gall.

TOLUOLE.—90%, 1s. 4d. to 1s. 8d. per gall. Firm. Pure, 1s. 6d. to 1s. 10d. per gall.

XYLOL.—1s. 3d. to 2s. per gall. Pure, 2s. 4d. per gall.

CREOSOTE.—Cresylic, 20/24%, 10d. to 11d. per gall.; middle oil, 7⅞d. to 8⅞d. per gall. Heavy, 8¼d. to 8⅝d. per gall. Standard specification, 7⅝d. to 7¾d. ex works. Salty, 7½d. per gall.

NAPHTHA.—Crude, 7½d. to 8d. per gall. Solvent 90/160, 9d. to 10½d. per gall. Solvent 95/160, 1s. 3d. to 1s. 4d. per gall. Solvent 90/190, 9½d. to 1s. 2d. per gall.

NAPHTHALENE CRUDE.—Drained Creosote Salts, £5 per ton. Whizzed, £8 per ton. Hot pressed, £8 10s. to £9 per ton.

NAPHTHALENE.—Crystals, £13 to £14 10s. per ton. Quiet. Flaked, £14 to £15 per ton, according to districts.

PITCH.—Medium soft, 60s. to 70s. per ton, f.o.b., according to district. Nominal.

PYRIDINE.—90/140, 5s. 6d. to 7s. per gall. 90/180, 3s. to 5s. per gall. Heavy, 2s. 6d. to 3s. per gall.

Intermediates and Dyes

In the following list of Intermediates delivered prices include packages except where otherwise stated:

ACID AMIDONAPHTHOL DISULPHO (1-8-2-4).—10s. 9d. per lb.

ACID ANTHRANILIC.—6s. per lb. 100%.

ACID BENZOIC.—1s. 8½d. per lb.

ACID GAMMA.—4s. 6d. per lb.

ACID H.—3s. per lb.

ACID NAPHTHIONIC.—1s. 6d. per lb.

ACID NEVILLE AND WINTHER.—4s. 9d. per lb.

ACID SULPHANILIC.—8½d. per lb.

ANILINE OIL.—8d. per lb. naked at works.

ANILINE SALTS.—8d. per lb. naked at works.

BENZALDEHYDE.—2s. 3d. per lb.

BENZIDINE BASE.—3s. 3d. per lb. 100% basis d/d.

BENZOIC ACID.—1s. 8½d. per lb.

o-CRESOL 29/31° C.—5½d. per lb.

m-CRESOL 98/100%.—2s. 3d. to 2s. 6d. per lb.

p-CRESOL 32/34° C.—2s. 3d. to 2s. 6d. per lb.

DICHLORANILINE.—2s. per lb.

DIMETHYLANILINE.—1s. 11d. per lb.

DINITROBENZENE.—8½d. per lb. naked at works. £75 per ton.

DINITROCHLORBENZENE.—£84 per ton d/d.

DINITROTOLUENE.—48/50° C. 8d. per lb. naked at works. 66/68° C. 9d. per lb. naked at works.

DIPHENYLAMINE.—2s. 10d. per lb. d/d.

a-NAPHTHOL.—2s. per lb. d/d.

B-NAPHTHOL.—10d. per lb. d/d.

a-NAPHTHYLAMINE.—1s. 3d. per lb.

B-NAPHTHYLAMINE.—3s. per lb.

o-NITRANILINE.—5s. 9d. per lb.

m-NITRANILINE.—3s. per lb. d/d.

p-NITRANILINE.—1s. 8d. per lb.

NITROBENZENE.—6d. per lb. naked at works.

NITRONAPHTHALENE.—1s. 3d. per lb.

R. SALT.—2s. 2d. per lb.

SODIUM NAPHTHIONATE.—1s. 8½d. per lb. 100% basis d/d.

o-TOLUIDINE.—8d. per lb.

p-TOLUIDINE.—2s. 1½d. per lb. naked at works.

m-XYLIDINE ACETATE.—2s. 6d. per lb. 100%.

N. W. ACID.—4s. 9d. per lb. 100%.

Wood Distillation Products

ACETATE OF LIME.—Brown, £10 5s. per ton. Good demand. Grey, £14 10s. to £15 per ton. Liquor, 9d. per gall.

CHARCOAL.—£6 to £9 per ton, according to grade and locality. Foreign competition severe.

IRON LIQUOR.—1s. 3d. per gall, 32° Tw. 1s. per gall. 24° Tw.

RED LIQUOR.—9d. to 10d. per gall.

WOOD CREOSOTE.—1s. 9d. per gall. Unrefined.

WOOD NAPHTHA, MISCIBLE.—3s. 11d. to 4s. 3d. per gall. Solvent, 4s. 3d. per gall.

WOOD TAR.—£4 to £5 per ton.

BROWN SUGAR OF LEAD.—£40 15s. per ton.

Rubber Chemicals

ANTIMONY SULPHIDE.—Golden, 6½d. to 1s. 5½d. per lb., according to quality; Crimson, 1s. 4d. to 1s. 6d. per lb., according to quality.

ARSENIC SULPHIDE, YELLOW.—1s. 9d. per lb.

BARYTES.—£3 10s. to £6 15s. per ton, according to quality.

CADMIUM SULPHIDE.—2s. 6d. to 2s. 9d. per lb.

CARBON BISULPHIDE.—£20 to £25 per ton, according to quantity.

CARBON BLACK.—5½d. per lb., ex wharf.

CARBON TETRACHLORIDE.—£45 to £50 per ton, according to quantity, drums extra.

CHROMIUM OXIDE, GREEN.—1s. 1d. per lb.

DIPHENYLGUANIDINE.—3s. 9d. per lb.

INDIARUBBER SUBSTITUTES, WHITE AND DARK.—5¾d. to 6¾d. per lb.

LAMP BLACK.—£35 per ton, barrels free.

LEAD HYPOSULPHITE.—9d. per lb.

LITHOPHONE, 30%.—£22 10s. per ton.

MINERAL RUBBER "RUBPRON."—£13 12s. 6d. per ton, f.o.r. London.

SULPHUR.—£9 to £11 per ton, according to quality.

SULPHUR CHLORIDE.—4d. to 7d. per lb., carboys extra.

SULPHUR PRECIP. B.P.—£47 10s. to £50 per ton.

THIOCARBAMIDE.—2s. 6d. to 2s. 9d. per lb., carriage paid.

THIOCARBANILIDE.—2s. 1d. to 2s. 3d. per lb.

VERMILION, PALE OR DEEP.—6s. to 6s. 3d. per lb.

ZINC SULPHIDE.—1s. per lb.

Pharmaceutical and Photographic Chemicals

ACID, ACETIC, PURE, 80%.—£39 per ton ex wharf London in glass containers.

ACID, ACETYL SALICYLIC.—2s. 5d. to 2s. 6d. per lb.

ACID, BENZOIC, B.P.—2s. to 3s. 3d. per lb., according to quantity. Solely ex Gum, 1s. 3d. to 1s. 6d. per oz., according to quantity.

ACID, BORIC B.P.—Crystal, 36s. to 39s. per cwt.; powder, 40s. to 43s. per cwt.; extra fine powder, 42s. per cwt., according to quantity. Carriage paid any station in Great Britain, in ton lots.
ACID, CAMPHORIC.—19s. to 21s. per lb.
ACID, CITRIC.—2s. to 2s. 2d. per lb. Less 5%.
ACID, GALLIC.—2s. 8d. per lb. for pure crystal, in cwt. lots.
ACID, PYROGALLIC, CRYSTALS.—7s. 3d. per lb. Resublimed, 8s. 3d. per lb.
ACID, SALICYLIC, B.P. PULV.—1s. 2d. to 1s. 3½d. per lb. Technical.—10½d. to 11½d. per lb.
ACID, TANNIC B.P.—2s. 8d. to 2s. 10d. per lb.
ACID, TARTARIC.—1s. 4½d. per lb., less 5%.
ACETANILIDE.—1s. 5d. to 1s. 8d. per lb. for quantities.
AMIDOL.—7s. 6d. to 9s. per lb., d/d.
AMIDOPYRIN.—8s. to 8s. 3d. per lb.
AMMONIUM BENZOATE.—3s. 3d. to 3s. 6d. per lb., according to quantity. 18s. per lb. ex Gum.
AMMONIUM CARBONATE B.P.—£37 per ton. Powder, £39 per ton in 5 cwt. casks. Resublimated, 1s. per lb.
ATROPINE SULPHATE.—9s. per oz.
BARBITONE.—5s. 9d. to 6s. per lb.
BENZONAPHTHOL.—3s. 3d. per lb. spot.
BISMUTH CARBONATE.—11s. 4d. to 11s. 7d. per lb.
BISMUTH CITRATE.—10s. 4d. to 10s. 7d. per lb.
BISMUTH SALICYLATE.—10s. 7d. to 10s. 10d. per lb.
BISMUTH SUBNITRATE.—9s. 7d. to 9s. 10d. per lb.
BISMUTH NITRATE.—6s. 7d. to 6s. 10d. per lb.
BISMUTH OXIDE.—14s. 7d. to 14s. 10d. per lb.
BISMUTH SUBCHLORIDE.—14s. 4d. to 14s. 7d. per lb.
BISMUTH SUBGALLATE.—8s. 7d. to 8s. 10d. per lb. Extra and reduced prices for smaller and larger quantities of all bismuth salts respectively.
BISMUTH ET AMMON LIQUOR.—Cit. B.P. in W. Qts. 1s. 1½d. per lb.; 12 W. Qts. 1s. 0½d. per lb.; 36 W. Qts., 1s. per lb.
BORAX B.P.—Crystal, 24s. to 27s. per cwt.; powder, 25s. to 28s. per cwt., according to quantity. Carriage paid any station in Great Britain, in ton lots.
BROMIDES.—Ammonium, 2s. to 2s. 1d. per lb.; potassium, 1s. 8¾d. to 1s. 9¾d. per lb.; sodium, 1s. 11d. to 2s. per lb.; granulated ½d. per lb. less; all spot. Large quantities at lower rates.
CALCIUM LACTATE.—1s. 2½d. to 1s. 3½d. per lb.
CAMPHOR.—Refined flowers, 2s. 11d. to 3s. per lb., according to quantity; also special contract prices.
CHLORAL HYDRATE.—3s. 2d. to 3s. 4d. per lb.
CHLOROFORM.—2s. 3d. to 2s. 7½d. per lb., according to quantity.
CREOSOTE CARBONATE.—6s. per lb.
ETHERS.—S.G. ·730—11½d. to 1s. 0½d. per lb., according to quantity; other gravities at proportionate prices.
FORMALDEHYDE.—£39 per ton, in barrels ex wharf.
GUAIACOL CARBONATE.—4s. 9d. to 5s. per lb.
HEXAMINE.—2s. 3d. to 2s. 6d. per lb.
HOMATROPINE HYDROBROMIDE.—30s. per oz.
HYDRASTINE HYDROCHLORIDE.—English make offered at 120s. per oz.
HYDROGEN PEROXIDE (12 VOLS.).—1s. 4d. per gallon, f.o.r. makers' works, naked. Winchesters, 2s. 11d. per gall. B.P., 10 vols., 2s. to 2s. 3d. per gall.; 20 vols., 4s. per gall.
HYDROQUINONE.—3s. 9d. to 4s. per lb., in cwt. lots.
HYPOPHOSPHITES.—Calcium, 3s. 6d. per lb., for 28 lb. lots; potassium, 4s. 1d. per lb.; sodium, 4s. per lb.
IRON AMMONIUM CITRATE.—B.P., 2s. 5d. to 2s. 8d. per lb. Green, 2s. 8d. to 3s. 1d. per lb.; U.S.P., 2s. 6d. to 2s. 9d. per lb.
IRON PERCHLORIDE.—18s. to 20s. per cwt., according to quantity.
IRON QUININE CITRATE.—B.P., 8¾d. to 9¼d. per oz.
MAGNESIUM CARBONATE.—Light commercial, £31 per ton net.
MAGNESIUM OXIDE.—Light commercial, £62 10s. per ton, less 2½%; Heavy commercial, £21 per ton, less 2½%; in quantity lower; Heavy Pure, 2s. to 2s. 3d. per lb., in 1 cwt. lots.
MENTHOL.—A.B.R. recrystallised B.P., 17s. per lb. net for January delivery; Synthetic, 9s. to 10s. per lb.; Synthetic detached crystals, 9s. to 12s. 6d. per lb., according to quantity; Liquid (95%), 9s. 6d. per lb.
MERCURIALS B.P.—Up to 1 cwt lots, Red Oxide, 7s. 6d. to 7s. 7d. per lb., levig., 7s. to 7s. 1d. per lb.; Corrosive Sublimate, Lump, 5s. 9d. to 5s. 10d. per lb., Powder, 5s. 2d. to 5s. 3d. per lb.; White Precipitate, Lump, 5s. 11d. to 6s. per lb., Powder, 6s. to 6s. 1d. per lb., Extra Fine, 6s. 1d. to 6s. 2d. per lb.; Calomel, 6s. 4d. to 6s. 5d. per lb.; Yellow Oxide, 6s. 10d. to 6s. 11d. per lb.; Persulph., B.P.C., 6s. 1d. to 6s. 2d. per lb.; Sulph. nig., 5s. 10s. to 5s. 11d. per lb. Special prices for larger quantities.
METHYL SALICYLATE.—1s. 5d. to 1s. 9d. per lb.
METHYL SULPHONAL.—9s. to 9s. 3d. per lb.
METOL.—9s. to 11s. 6d. per lb. British make.
PARAFORMALDEHYDE.—1s. 9d. per lb. for 100% powder.
PARALDEHYDE.—1s. 1d. to 1s. 4d. per lb.
PHENACETIN.—2s. 6d. to 2s. 9d. per lb.
PHENAZONE.—4s. to 4s. 3d. per lb.
PHENOLPHTHALEIN.—6s to 6s. 3d. per lb.
POTASSIUM BITARTRATE 99/100% (Cream of Tartar).—102s. per cwt., less 2½ per cent.
POTASSIUM CITRATE.—B.P.C., 2s. 5d. to 2s. 6d. per lb.; U.S.P., 2s. 3d. to 2s. 6d. per lb.
POTASSIUM FERRICYANIDE.—1s. 9d. per lb., in cwt. lots.
POTASSIUM IODIDE.—16s. 8d. to 17s. 2d. per lb., according to quantity.
POTASSIUM METABISULPHITE.—6d. per lb., 1-cwt. kegs included, f.o.r. London.
POTASSIUM PERMANGANATE.—B.P. crystals, 5½d. per lb., spot.
QUININE SULPHATE.—1s. 8d. to 1s. 9d. per oz., bulk in 100 oz. tins.
RESORCIN.—2s. 10d. to 3s. per lb., spot.
SACCHARIN.—55s. per lb.; in quantity lower.
SALOL.—2s. 4d. per lb.
SODIUM BENZOATE, B.P.—1s. 8d. to 1s. 11d. per lb.
SODIUM CITRATE, B.P.C., 1911.—2s. to 2s. 3d. per lb., B.P.C., 1923—2s. 4d. to 2s. 5d. per lb. U.S.P., 2s. 3d. to 2s. 6d. per lb., according to quantity.
SODIUM FERROCYANIDE.—4d. per lb., carriage paid.
SODIUM HYPOSULPHITE, PHOTOGRAPHIC.—£15 per ton, d/d consignee's station in 1-cwt. kegs.
SODIUM NITROPRUSSIDE.—16s. per lb.
SODIUM POTASSIUM TARTRATE (ROCHELLE SALT).—90s. to 95s. per cwt. Crystals, 5s. per cwt. extra.
SODIUM SALICYLATE.—Powder, 1s. 7d. to 1s. 9d. per lb. Crystal, 1s. 8½d. to 1s. 10d. per lb.
SODIUM SULPHIDE, PURE RECRYSTALLISED.—10d. to 1s. 1d. per lb.
SODIUM SULPHITE, ANHYDROUS.—£27 10s. to £28 10s. per ton, according to quantity. Delivered U.K.
SULPHONAL.—6s. 9d. to 7s. per lb.
TARTAR EMETIC, B.P.—Crystal or powder, 2s. 1d. to 2s. 3d. per lb.
THYMOL.—Puriss., 9s. 6d. to 9s. 9d. per lb., according to quantity. Firmer. Natural, 14s. 3d. per lb.

Perfumery Chemicals

ACETOPHENONE.—7s. per lb.
AUBEPINE (EX ANETHOL).—11s. per lb.
AMYL ACETATE.—2s. 6d. per lb.
AMYL BUTYRATE.—4s. 9d. per lb.
AMYL SALICYLATE.—2s. 9d. per lb.
ANETHOL (M.P. 21/22° C.).—5s. 6d. per lb.
BENZYL ACETATE FROM CHLORINE-FREE BENZYL ALCOHOL.—2s. per lb.
BENZYL ALCOHOL FREE FROM CHLORINE.—2s. per lb.
BENZALDEHYDE FREE FROM CHLORINE.—2s. 6d. per lb.
BENZYL BENZOATE.—2s. 6d. per lb.
CINNAMIC ALDEHYDE NATURAL.—15s. 6d. per lb.
COUMARIN.—9s. 9d. per lb.
CITRONELLOL.—13s. 6d. per lb.
CITRAL.—8s. 3d. per lb.
ETHYL CINNAMATE.—6s. per lb.
ETHYL PHTHALATE.—2s. 9d. per lb.
EUGENOL.—8s. 3d. per lb.
GERANIOL (PALMAROSA).—20s. per lb.
GERANIOL.—6s. to 10s. per lb.
HELIOTROPINE.—4s. 6d. per lb.
ISO EUGENOL.—13s. per lb.
LINALOL.—Ex Bois de Rose, 15s. per lb. Ex Shui Oil, 10s. 6d. per lb.
LINALYL ACETATE.—Ex Shui Oil, 14s. 6d. per lb. Ex Bois de Rose, 18s. 6d. per lb.
METHYL ANTHRANILATE.—8s. 6d. per lb.
METHYL BENZOATE.—4s. per lb.
MUSK KETONE.—35s. per lb.
MUSK XYLOL.—7s. per lb.
NEROLIN.—3s. 9d. per lb.
PHENYL ETHYL ACETATE.—11s. per lb.
PHENYL ETHYL ALCOHOL.—10s. 6d. per lb.
RHODINOL.—35s. per lb.
SAFROL.—1s. 6d. per lb.
TERPINEOL.—1s. 6d. per lb.
VANILLIN.—15s. 3d. to 16s. 6d. per lb.

Essential Oils

ALMOND OIL.—Foreign S.P.A., 10s. 6d. per lb.
ANISE OIL.—2s. 9d. per lb.
BERGAMOT OIL.—24s. per lb.
BOURBON GERANIUM OIL.—15s. per lb.
CAMPHOR OIL.—9d. per lb.
CANANGA OIL, JAVA.—12s. 9d. per lb.
CINNAMON OIL LEAF.—6s. 9d. per oz.
CASSIA OIL, 80/85%.—8s. 3d. per lb.
CITRONELLA OIL.—Java, 1s. 10d. per lb., c.i.f. U.K. port. Ceylon, pure, 1s. 9d. per lb.
CLOVE OIL.—5s. 6d. per lb.
EUCALYPTUS OIL, AUSTRALIAN.—2s. 1d. per lb.
LAVENDER OIL.—Mont Blanc, 38/40%, Esters, 16s. per lb.
LEMON OIL.—9s. 6d. per lb.
LEMONGRASS OIL.—4s. 3d. per lb.
ORANGE OIL, SWEET.—13s. per lb.
OTTO OF ROSE OIL.—Anatolian, 35s. per oz. Bulgarian, 62s. 6d. per oz.
PALMA ROSA OIL.—12s. 6d. per lb.
PEPPERMINT OIL.—Wayne County, 15s. 9d. per lb.; Japanese, 7s. 3d. per lb.
PETITGRAIN.—7s. 3d. per lb. Sandalwood, Mysore, 26s. 6d. per lb., 90/95%, 16s. 6d. per lb.

Scottish Chemical Market

The following notes on the Scottish Chemical Market are specially supplied to* THE CHEMICAL AGE *by Messrs. Charles Tennant and Co., Ltd., Glasgow, and may be accepted as representing the firm's independent and impartial opinions.

Glasgow, April 4, 1928.

BUSINESS in the heavy chemical market has been rather quieter during the past week. There are two changes in prices to record, viz., acetone advanced £1 per ton, and methylated spirit reduced a further 5d. per gallon.

Industrial Chemicals

ACETONE, B.G.S.—£64 to £67 per ton, ex store, according to quantity.

ACID ACETIC.—98/100%, glacial £56 to £67 per ton, according to quality and packing, c.i.f. U.K. ports; 80% pure £37 10s. per ton, ex wharf; 80% technical £37 10s. per ton, ex wharf.

ACID BORIC.—Crystals, granulated or small flakes, £30 per ton. Powdered £32 per ton, packed in bags, carriage paid U.K. stations.

ACID CARBOLIC, ICE CRYSTALS.—Quoted 6¼d. per lb., f.o.b. U.K. ports.

ACID CITRIC, B.P.—Quoted 1s. 11¾d. per lb., less 5%, ex store, spot delivery. Rather cheaper to come forward.

ACID HYDROCHLORIC.—Usual steady demand. Arsenical quality, 4s. per carboy. Dearsenicated quality 5s. 6d. per carboy, ex works, full wagon loads.

ACID NITRIC.—80° quality, £24 10s. per ton, ex station, full truck loads.

ACID OXALIC, 98/100%.—On offer from the Continent at 3¼d. per lb., ex wharf. Spot material quoted 3½d. per lb., ex store. In better demand.

ACID SULPHURIC.—£2 15s. per ton, ex works, for 144° quality; £5 15s. per ton for 168° quality. Dearsenicated quality 20s. per ton extra.

ACID TARTARIC, B.P. CRYSTALS.—Nominally 1s. 4½d. per lb., less 5%, ex wharf, but demand not so great and some spot parcels could probably be obtained for less.

ALUMINA SULPHATE, 17/18%, IRON FREE.—Quoted £5 10s. per ton, c.i.f. U.K. ports, prompt shipment. Spot material available at about £5 15s. per ton, ex store.

ALUM, LUMP POTASH.—Spot material available at about £9 per ton, ex store. Crystal meal quoted £8 10s. per ton, ex store. Lump quality on offer from the Continent at £8 5s. per ton, c.i.f. U.K. ports.

AMMONIA, ANHYDROUS.—Unchanged at about 9d. per lb., carriage paid. Containers extra and returnable.

AMMONIA CARBONATE.—Lump £37 per ton; powdered £39 per ton, packed in 5 cwt. casks, delivered or f.o.b. U.K. ports.

AMMONIA LIQUID, 880°.—Unchanged at about 2¼d. to 3d. per lb., delivered, according to quantity.

AMMONIA MURIATE.—Grey galvanisers' crystals of British manufacture unchanged at £23 to £24 per ton, ex station. Continental on offer £19 15s. per ton, c.i.f. U.K. ports. Fine white crystals quoted £17 10s. per ton. c.i.f. U.K. ports.

ARSENIC, WHITE POWDERED.—Quoted £19 7s. 6d. per ton, ex wharf, prompt despatch from mines. Spot material available at £20 5s. per ton, ex store.

BARIUM CARBONATE, 98/100%.—English material on offer at £7 5s. per ton, ex store. Continental quoted £7 per ton, c.i.f. U.K. ports.

BARIUM CHLORIDE, 98/100%.—Large white crystals quoted £6 17s. 6d. per ton, c.i.f. U.K. ports.

BLEACHING POWDER.—British manufacturers' contract price to consumers £6 12s. 6d. per ton, delivered minimum four-ton lots. Continental on offer at £6 10s. per ton, ex wharf.

CALCIUM CHLORIDE.—British manufacturers' price £4 5s. to £4 15s. per ton, according to quantity and point of delivery. Continental material on offer at £3 12s. 6d. per ton, c.i.f. U.K. ports.

COPPERAS, GREEN.—Unchanged at about £3 10s. per ton, f.o.r. works or £4 12s. 6d. per ton, f.o.b. U.K. ports for export.

COPPER SULPHATE.—Continental price unchanged at about £25 per ton, c.i.f. U.K. ports. Some British material available at about £25 per ton, ex store.

FORMALDEHYDE, 40%.—Offered at £35 10s. per ton, c.i.f. U.K. ports. Spot material quoted £39 per ton, ex store.

GLAUBER SALTS.—English material unchanged at £4 per ton, ex store or station. Continental quoted £2 15s. per ton. c.i.f. U.K. ports.

LEAD, RED.—Imported material on offer at £31 per ton, ex store.

LEAD, WHITE.—Quoted £31 10s. per ton, ex store.

LEAD ACETATE.—White crystals quoted £39 15s. per ton, c.i.f. U.K. ports; brown £38 10s. per ton, c i.f. U.K. port. Spot material on offer at £42 15s. per ton, ex store, spot delivery.

MAGNESITE, GROUND CALCINED.—Quoted £8 10s. per ton, ex store, in moderate demand.

METHYLATED SPIRIT.—Industrial quality 64 O.P. now quoted 1s. 7d. per gallon, less 2½%, delivered.

POTASSIUM BICHROMATE.—4¼d. per lb. delivered, minimum four-ton lots. Under four-ton lots ½d. per lb. extra.

POTASSIUM CARBONATE, 96/98%.—Rather scarce for immediate delivery. Quoted £25 10s. per ton, ex wharf. Spot material about £26 10s. per ton, ex store.

POTASSIUM CHLORATE, 99/100%.—Rather firmer and powdered quality now offered at £25 15s. per ton, c.i.f. U.K. port. Crystals 30s. per ton more.

POTASSIUM NITRATE.—Refined granulated quality quoted £19 2s. 6d. per ton, c.i.f. U.K. ports. Spot material on offer at about £20 10s. per ton, ex store.

POTASSIUM PRUSSIATE (YELLOW).—Unchanged at about 6½d. per lb., ex store, spot delivery. Offered from the Continent at 6¾d. per lb.

SODA CAUSTIC.—Powdered, 98/99%, £17 7s. 6d. per ton; solid, 76/77%, £14 10s. per ton; 70/72%, £13 12s. 6d. per ton, minimum four-ton lots, carriage paid on contract. Spot material 10s. per ton extra.

SODIUM ACETATE.—In good demand and spot material scarce. Quoted £20 5s. per ton, ex store.

SODIUM BICARBONATE.—Refined recrystallised £10 10s. per ton, ex quay or station. M.W. quality 30s. per ton less.

SODIUM BICHROMATE.—Quoted 3d. per lb., delivered buyers' works, minimum four-ton lots. Under four and over two-ton lots 3⅛d. per lb. Under two-ton lots 3¼d. per lb.

SODIUM CARBONATE (SODA CRYSTALS).—£5 to £5 5s. per ton, ex quay or station. Powdered or pea quality 27s. 6d. per ton extra. Light soda ash £7 3s. 9d. per ton, ex quay, minimum four-ton lots, with various reductions for contracts.

SODIUM HYPOSULPHITE.—Large crystals of English manufacture quoted £8 17s. 6d. per ton, ex station, minimum four-ton lots. Pea crystals on offer at £14 15s. per ton, ex station, minimum four-ton lots.

SODIUM NITRATE.—Quoted £11 per ton, ex store.

SODIUM NITRITE, 100%.—Quoted £19 10s. per ton, ex store.

SODIUM PRUSSIATE (YELLOW).—In moderate demand and price unchanged at about 4½d. per lb., ex store. Offered for prompt shipment from the Continent at 4⅜d. per lb., ex wharf.

SODIUM SULPHATE (SALTCAKE).—Prices 50s. per ton, ex works, for unground quality, 52s. 6d. per ton, delivered. Ground quality 3s. 6d. per ton extra.

SODIUM SULPHIDE.—Prices now as follows: solid, 60/62%, £9 per ton; broken, 60/62%, £10 per ton; crystals, 30/32%, £9 2s. 6d. per ton, delivered buyers' works on contract, minimum four-ton lots. Special prices for some consumers. Spot material 5s. per ton extra.

ZINC CHLORIDE.—British material, 98/100%, quoted £24 15s. per ton. f.o.b. U.K. ports; 98/100%, solid, on offer from the Continent at about £21 15s. per ton, c.i.f. U.K. ports. Powdered 20s. per ton extra.

ZINC SULPHATE.—Continental material quoted £11 15s. per ton, ex wharf.

NOTE.—The above prices are for bulk business and are not to be taken as applicable to small parcels.

London Conference of Chemists and Engineers

As the Society of Chemical Industry is holding its annual meeting this year in New York, it has been decided to hold a special meeting in London in May. The Institution of Chemical Engineers has accepted an invitation to take part, and a programme has been arranged by a joint committee. The annual general meeting and dinner of the Chemical Engineering Group will be held on Friday, May 11, when Mr. F. H. Carr will give an address on "Some Chemical Engineering Aspects of the Fine Chemical Industry." Saturday will be occupied by a visit to the Rothamsted Experimental station, and on Sunday arrangements have been made for a service at the Temple Church, and for a visit to the Zoological Gardens. On Monday, May 14, the address in the morning will be by Sir Arthur Duckham, on "The Fuel Industries and the Work of the Chemical Engineer," and in the afternoon papers will be read on "Water Purification," by Sir Alexander Houston, and on "Pollution of Tidal and Non-Tidal Streams," by Mr. J. H. Coste. In the evening a dinner and dance will be held at the Connaught Rooms. On Tuesday morning addresses will be given by Sir Alfred Mond and Sir John Russell. In the afternoon Lt.-Col. G. P. Pollitt will deliver an address on "Billingham."

Manchester Chemical Market

[From Our Own Correspondent.]

Manchester, April 4, 1928.

To some extent business this week on the Manchester chemical market has been under the influence of the approaching holiday, this being reflected in a somewhat smaller flow of delivery specifications against contracts and also in a contraction of inquiry in the open market for chemicals for prompt or early delivery. In the aggregate, therefore, trade this week has been on comparatively quiet lines, but for the most part quotations have been held at reasonably steady levels.

Heavy Chemicals

Phosphate of soda keeps steady in the neighbourhood of £12 10s. per ton, although business in this section has been rather slow. Makers' offers of bicarbonate of soda are maintained at £10 10s. per ton, a quietly steady trade in this material being put through. Hyposulphite of soda is selling in moderate quantities at round £16 10s. per ton for the photographic quality, and £9 15s. for the commercial. Current offers of prussiate of soda are at about 4¼d. per lb., a moderate inquiry being reported during the past week. There is a continued steady demand about for caustic soda at firm prices, these ranging from £13 7s. 6d. to £15 7s. 6d. per ton, according to strength. Sulphide of sodium is attracting relatively little buying interest, but values are pretty well maintained, 60-65 per cent. concentrated solid being on offer at £9 15s. to £10 and commercial at about £7 15s. per ton. A quiet trade is passing in the case of saltcake, and makers are still quoting on a contract basis of £2 12s. 6d. per ton. Alkali is firm and in fair demand at £6 2s. 6d. per ton to home trade consumers. A moderate business is reported in the case of bleaching powder on a contract basis of £7 per ton. Current offers of nitrite of soda are at £19 to £19 5s. per ton, and inquiry for this is on a fairly satisfactory scale. Bichromate of soda meets with a moderate demand at round 3¼d. per lb., with chlorate on the quiet side but steady at from 2¾d. to 3d. per lb.

Yellow prussiate of potash has been moving off this week rather slowly at about 6⅝d. per lb. Only a limited amount of attention has been paid to chlorate of potash, offers of which are at round 3d. per lb. Bichromate of potash meets with a fair volume of inquiry, and prices are steady at up to 4¼d. per lb. Caustic potash continues to be quoted here on the basis of £33 5s. per ton for prompt delivery of 1 to 5-ton lots, and a moderate trade is being put through. Offers of carbonate of potash are at round £25 5s. per ton, with the demand for this material on comparatively quiet lines. There has been little change in the position of permanganate of potash, B.P. quality selling at about 5¼d. per lb. and commercial at 4¼d.

Current offers of sulphate of copper for export are at £26 10s. to £27 per ton, f.o.b., and a quietly steady demand for this continues to be reported. A certain amount of inquiry for arsenic is in circulation, and values are about maintained at round £17 5s. per ton at the mines for white powdered, Cornish makes. A quiet trade is being done in acetate of lime and quotations are held at the lower levels, grey being quoted at £16 per ton and brown at about £10. Acetate of lead is somewhat steadier at £40 10s. per ton for white and £30 for brown, but the demand for this is still restricted. Offers of nitrite of lead are still at round £37 per ton.

Acids and Tar Products

Citric acid remains in rather short supply and prices are firm at about 1s. 11¾d. per lb., although current inquiry for this is comparatively slow. Tartaric acid is quoted at from 1s. 4¼d. to 1s. 4½d. per lb., and a quiet demand is reported. Acetic acid is well held at £37 to £38 per ton for the 80 per cent. commercial product and about £66 for the glacial. Oxalic acid is steady and in moderate request at round 3¼d. per lb.

Among the tar products pitch is attracting little attention yet, but prices are nominally unchanged at about £3 per ton, f.o.b. There is still a fair amount of inquiry in the case of creosote oil, and values are steady at 7¼d. per gallon. Carbolic acid crystals are quiet but about unchanged at 6¾d. per lb., with crude on offer at 2s. 3½d. to 2s. 4d. per gallon. Solvent naphtha is in moderate request at 10½d. to 11d. per gallon.

London Chemical Market

In view of the approach of the holiday, there has been little change in markets, and there is of course the usual tendency for business to slacken off. In view of the position a report is not made this week, as there is really no change to record.

Latest Oil Prices

LONDON—April 3.—Linseed Oil was in fair request at 2s. 6d. to 5s. per ton decline. Spot, ex mill, £39 15s.; April, £28 15s.; May, £29 2s. 6d.; May-August, £29 7s. 6d.; September-December, £30 12s. 6d. Rapeoil, quiet. Crude extracted, £41; technical refined, £43, naked, ex wharf. Cotton Oil, quiet. Refined common edible, £40; Egyptian crude, £35; deodorised, £42 per ton, naked. Turpentine, inactive. American spot, 40s. 6d.; May-June, 40s. 9d.; July-December, 41s. per cwt.

HULL—April 3.—Linseed Oil.—Spot, £29; April, £29 5s.; May-August, £29 10s.; September-December, £30 12s. 6d. per ton, naked. Cotton Oil.—Bombay crude, £32 10s.; Egyptian crude (new), £33 15s.; edible refined, £37 10s.; technical, £36; deodorised, £39 10s. per ton, naked. Palm Kernel Oil.—Crushed, 5½ per cent., £38 per ton, naked. Groundnut Oil.—Crushed extracted, £41; deodorised, £45. Soya Oil.—Extracted and crushed, £33; deodorised, £36 10s. per ton. Rape Oil.—Crude extracted, £40; refined, £42 per ton. Turpentine, Castor Oil, and Cod Oil, unchanged.

South Wales By-Products

There is very little change to report in South Wales by-product activities. Pitch is in better demand, and several parcels have been bought by Welsh fuel manufacturers on a basis of from 59s. to 62s. 6d. per ton. Creosote is slightly weaker at 7¼d. to 8¼d. per gallon, f.o.r. makers' works, while heavy and solvent naphthas have also weakened slightly. Crude tar is easy round about 50s. per ton, f.o.r., and refined tars are unchanged, coke oven tar changing hands round about 7¾d. to 8¼d. per gallon, delivered in barrels, and gas-works tar at 7⅛d. to 8d. per gallon, delivered in barrels. Patent fuel and coke exports are slightly better, patent fuel at Cardiff selling at 21s. to 23s. per ton, ex ship, and Swansea at 20s. 3d. to 20s. 9d. ex ship. Coke is unchanged, best foundry selling at from 32s. 6d. to 37s., and other sorts from 25s. to 32s. 6d. per ton. Patent fuel exports for the last four weeks totalled 81,102 tons, while oil imports over the same period totalled 7,739,885 gallons.

Nitrogen Products

Export.—There is nothing fresh to report in the foreign markets which are large consumers of sulphate of ammonia. The sugar growing countries, as well as Spain, China, and Japan, all continue to consume increasing quantities of sulphate of ammonia. The market remains firm at £10 to £10 2s. 6d. per ton, f.o.b. U.K. port in single bags.

Home.—Merchants are busy procuring supplies for their farmer customers, and it is understood that the capacity of producers has been taxed in order to meet the demand promptly. Prices remain unchanged, at £10 13s. per ton, delivered in 6-ton lots to consumers' nearest station. It is practically certain that prices will remain unchanged until the end of May or June.

Nitrate of Soda.—It is reported that the stocks of nitrate for consuming countries are being steadily diminished, except in the United States, where the demand has been on such a scale that fresh shipments have been required from Chile. Two cargoes destined for Europe have had to be diverted to the United States. The price f.a.s. Chile for prompt shipment remains at 16s. 6d. to 16s. 9d. per metric quintal.

Calcium Cyanamide 19 per Cent. N

Widespread demand is now being experienced for this fertiliser for immediate delivery. The farmers' price for April delivery for 4-ton lots remains unchanged at £9 per ton, carriage paid to any railway station in Great Britain.

Prices of Methylated Spirits and Finish

The Methylating Co., Ltd., announce that since April 2 their prices until further notice, without engagement on their part, have been as follows:

In One Delivery.	Industrial Methylated Spirits.		Pyridinised Industrial Methylated Spirits.		Mineralised Methylated Spirits (Coloured Violet)	
	61 o.p.	64 o.p.	61 o.p.	64 o.p.	61 o.p.	64 o.p.
500 galls. and upwards	1s. 6d.	1s. 7d.	1s. 8d.	1s. 9d.	—	—
100 „ and under 500	1s. 7d.	1s. 8d.	1s. 9d.	1s. 10d.	2s. 7d.	2s. 8d.
30 „ „ 100	1s. 9d.	1s. 10d.	1s. 11d.	2s. 0d.	2s. 9d.	2s. 10d.
10 „ „ 30	1s. 11d.	2s. 0d.	2s. 1d.	2s. 2d.	2s. 11d.	3s. 0d.

Methylated resin finish 2d. per gallon extra, and methylated shellac finish 8d. per gallon extra, over the prices quoted for pyridinised industrial methylated spirits.

Company News

SADLER AND CO.—An interim dividend of 3 per cent., less income tax, is announced, payable on April 17.

BURT, BOULTON AND HAYWOOD.—An interim dividend of 1s. per share, less tax at 4s., is payable on April 19 on the ordinary shares.

PAN DE AZUCAR NITRATE CO.—The directors have declared an interim dividend of 5 per cent., less income tax, on account of the year ending June 30, 1928.

BABCOCK AND WILCOX.—The directors recommend a final dividend on the ordinary shares of 8 per cent., free of tax, making, with the interim dividend of 7 per cent., a total of 15 per cent. for the year ended December 31 last.

LEVER BROTHERS, LTD.—A net profit of £5,390,287 is reported for the year 1927 against £4,899,966 for the previous year. A dividend of 5 per cent. is to be paid on the ordinary shares, £272,962 placed to reserve and £101,795 carried forward.

TARAPACA AND TOCOPILLA NITRATE CO.—The directors have decided to recommend the payment of a dividend of 5 per cent., less tax, in respect of the year 1927. The last distribution made by the company was for the year 1924, when 10 per cent. was paid.

ASSOCIATED DYERS AND CLEANERS.—A final dividend on the ordinary shares of 1s. 4d. per share, less tax, making 10 per cent. for the year ended December 31, 1927, is recommended, plus a bonus distribution of 2½ per cent., less tax, payable on April 30, 1928.

JURGENS, LTD.—After making reserves for depreciation and providing for all contingencies, the results for the year ended December 31 last, show a net profit of £325,550, to which is added the balance from 1926 of £131,550, making a total of £457,100. The directors recommend the payment of 5 per cent. dividend, free of tax, on the ordinary shares, carrying forward £157,100.

THARSIS SULPHUR AND COPPER CO.—The report for the year ended December 31 last, states that the net profit for the period was £73,087, which, with the balance of £99,522 brought forward, gives a total of £172,609. The directors recommend the payment of a dividend of 3s. 6d. per share, equal to 8¾ per cent. on the capital of the company, less income tax at 4s. per £, payable on and after May 10, carrying forward £85,109.

RECKITT AND SONS, LTD.—At the annual meeting at Hull on March 30, resolutions were approved increasing the capital to five millions by the creation of one million new second 5 per cent. fully-paid preference shares of £1 each, the shares to be distributed in the proportion of one new preference share for every four ordinary shares as a bonus to shareholders. The profits for 1927 amounted to £1,323,333, and a final dividend of 2s., making 4s. 3d. per share for the year, was declared. A prosperity bonus of £92,500 was allocated to the staff and employees, and £250,000 transferred to reserve. The balance carried forward is £266,030.

BELL'S UNITED ASBESTOS CO., LTD.—The result of operations for the year ended December 31 is a net profit of £65,454, to which is added £43,973 brought forward, making a total of £109,427. The directors recommend the payment on April 16, of a dividend on the old ordinary shares of 1s. 6d. per share, making, with the interim paid on October 17 last, a total distribution of 12½ per cent. for the year; the payment on April 16, of a dividend on the new ordinary shares of 7½d. per share; that £3,000 be placed to staff pensions account; that £15,000 be placed to reserve, and that £45,455 be carried forward. Negotiations have been completed for the amalgamation of the British Fibrocement Works, Ltd., with the company, subject to the approval of the shareholders to the necessary increase of the authorised capital, for which resolutions will be submitted to an extraordinary general meeting to be held at Cannon Street Hotel, London, on April 12, at 2 p.m.

Methylated Ethers Prices Reduced

MAY AND BAKER, LTD., announce that another reduction in the price of methylated spirit enables them to reduce the prices of methylated ethers by one penny per lb.

New Chemical Trade Marks

Applications for Registration

This list has been specially compiled for us from official sources by Gee and Co., Patent and Trade Mark Agents, Staple House, 51 and 52, Chancery Lane, London, W.C.2, from whom further information may be obtained, and to whom we have arranged to refer any inquiries relating to Patents, Trade Marks, and Designs.

Opposition to the Registration of the following Trade Marks can be lodged up to April 28, 1928.

APHIDON.

488,302. Class 2. Chemical substances used for agricultural, horticultural, veterinary, and sanitary purposes. Bayer Products, Ltd., 31 to 34, Basinghall Street, London, E.C.2; merchants and manufacturers. February 8, 1928.

MONZOL.

488,564. Class 2. Chemical substances used for agricultural, horticultural, veterinary, and sanitary purposes. The Mond Staffordshire Refining Co., Ltd., 47, Victoria Street, London, S.W.1; merchants. February 15, 1928. (To be Associated. Sect. 24.)

SOLEX.

482,259. Class 4. Raw, or partly prepared vegetable, animal, and mineral substances used in manufactures, not included in other classes, but not including raw or partly prepared substances for use in the manufacture of leather. Oils for use in tanning, turpentine substitutes or stone, and not including any goods of a like kind to any of these excluded goods. Société Anonyme Solex (a Joint Stock Company organised under the laws of France), 190, Avenue de Neuilly, Neuilly-sur-Seine (Seine), France; manufacturers. July 7, 1927.

DIAGUM.

487,200. Class 4. Raw, or partly prepared vegetable, animal, and mineral substances used in manufactures, not included in other classes. Internationale Diagum-Aktiengesellschaft (a Joint Stock Company organised under the laws of Liechtenstein), Vaduz, Principality of Liechtenstein; manufacturers. January 2, 1928. (To be Associated. Sect. 24.)

Chemical Trade Inquiries

The following inquiries, abstracted from the "Board of Trade Journal," have been received at the Department of Overseas Trade (Development and Intelligence), 35, Old Queen Street, London, S.W.1. British firms may obtain the names and addresses of the inquirers by applying to the Department (quoting the reference number and country), except where otherwise stated.

WOOD ALCOHOL AND PYRIDINE.—The District Inspector of Customs in Oslo Customs district is requesting tenders for 9,000 kilogrammes of wood alcohol and 2,200 kilogrammes of pyridine for denaturing spirits. Tenders, accompanied by samples, are to reach the District Inspector not later than April 12. The goods are to be delivered free at the Customs House store. (Reference B. 4,310.)

Tariff Changes

GREECE.—A Decree effective from August 1, 1927, provides for an import duty of 2 drachmae per 100 kgs. on impure galactic acid.

ROUMANIA.—By virtue of a Royal Decree certain synthetic essences may be used to flavour sweetstuffs, and certain colours may be used in foods. Conditions are laid down with regard to quantities. Fuller details are contained in the *Board of Trade Journal* for March 29.

ITALY.—A Decree Law provides as a temporary measure that cyanides of potassium, sodium and calcium for agricultural use may be imported free of Customs duty.

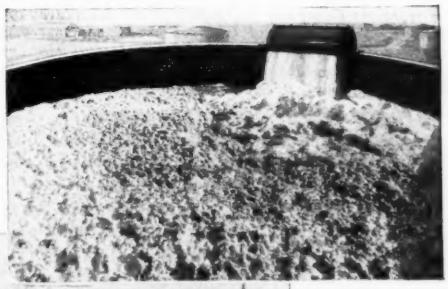
Royal Institution Discourses

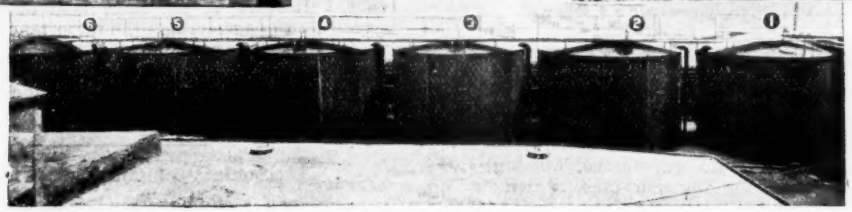
THE FRIDAY EVENING DISCOURSES at the Royal Institution will be resumed on April 20 at 9 o'clock, when Sir Henry Lyons, Director of the Science Museum, will deliver a discourse on "Heirlooms of Industry in the Science Museum."

Protecting moderate size oil storage tanks

The Foamite Generator System

The standards which form the basis for determining the efficiency of the various parts which go to make up the Foamite Generator System have been firmly established by long successful service records in actual working conditions.





IN the Foamite Generator System, Firefoam is produced with the Foamite Foam Generator by introducing Foamite Generator Powder into a stream of flowing water. The Generator is located at a distance from the burning tank, and the Firefoam is carried to the tank through fixed piping and is discharged on to the burning liquid from a discharge chamber that is fastened to the tank.

The operation of this system is simplicity itself. A hose connection is all that is needed from the water supply to the inlet side of the Generator, which is set up near the Generator Connection Stand. Another length of hose connects the outlet side of the Generator to the Generator connection leading to the burning tank. The Generator is then operated in the usual manner. Genuine Firefoam is thus discharged on to the surface of the burning oil in adequate quantity and at correct rate of flow through a discharge chamber similar to those used so successfully with the Foamite (Two Solution) Systems.

Full particulars of the Foamite Generator Installation, which dispenses with the large solution storage tanks, can be obtained from Foamite Firefoam Limited, 55–57 Great Marlborough Street, London, W.1.

Foamite Fire Protection

A Complete Engineering Service

Against Fire

Commercial Intelligence

The following are taken from printed reports, but we cannot be responsible for any errors that may occur.

Mortgages and Charges

[*NOTE.—The Companies Consolidation Act of 1908 provides that every Mortgage or Charge, as described therein, shall be registered within 21 days after its creation, otherwise it shall be void against the liquidator and any creditor. The Act also provides that every Company shall, in making its Annual Summary, specify the total amount of debts due from the Company in respect of all Mortgages or Charges. The following Mortgages and Charges have been so registered. In each case the total debt, as specified in the last available Annual Summary, is also given—marked with an *—followed by the date of the Summary, but such total may have been reduced.*]

BURTON (W.) AND SONS, LTD., Leicester, bleachers. (M., 7/4/28.) Registered March 16, £3,000 further charge to building society. Charged on properties in Leicester, with machinery, etc. *£6,000. April 27, 1927.

SERRE (ACHILLE), LTD., London, E., dyers. (M., 7/4/28.) Registered March 22, trust deed dated March 14, 1928, securing £150,000 first debenture stock; charged on property in Blackhorse Lane, Walthamstow; also general charge. *£10,200. March 30, 1927.

London Gazette, &c.

Companies Winding Up Voluntarily

AGUAS BLANCAS NITRATE CO., LTD. (C.W.U.V., 7/4/28.) By special resolution, March 8, confirmed March 26, J. Featherston, 10–11, Finsbury Circus, London, E.C., appointed as liquidator for the purposes of winding-up and reconstruction.

RANSOLEUM, LTD. (C.W.U.V., 7/4/28.) F. C. Toulmin, of Leach Johnson and Co., 3, Queen Street, Manchester, Incorporated Accountant, appointed as liquidator, March 24. Meeting of creditors at the Law Library, Kennedy Street, Manchester, Wednesday, April 11, at 3 p.m.

Partnership Dissolved

SHADEINE CO. (Alexander Ernest Louis MORELLE and John Carlton HUNTING), hair dye manufacturers, 58, Westbourne Grove, London, W.2, by mutual consent as from February 29, 1928.

New Companies Registered

ISAAC BENTLEY AND CO., LTD., Vinoles Oil Works, Trafford Park, Manchester. Registered as a "private" company on March 27. Nom. capital, £80,000 in £1 shares (30,000 7½ per cent. cumulative preference and 50,000 ordinary). To acquire the business of Isaac Bentley and Co., Ltd., and to carry on the business of oil refiners, tallow melters, grease makers, soap boilers, candle makers and merchants, manufacturers of and dealers in oils, paints, pigments, colours and varnishes, etc. Directors: F. I. Bentley, A. I. Barlow.

BLAKES (LONDON), LTD. Registered April 2. Nominal capital, £500 in £1 shares. To acquire the business of oil merchants, refiners and the like carried on at 94, Bow Road, Poplar, as "J. Blake and Co.," and to carry on the business of exporters, importers, etc., melters, blenders, refiners and distributors of fat, tallow, lard compounds/ glycerine, vaseline, wax, motor and gen ral grease and lubricants, soap, candles and the like. Directors: R. J. Evans, 50, Sandford Road, East Ham; J. L. Creffield.

BURLINGTON LABORATORIES (LONDON) LTD.—Registered March 31. Nominal capital, £2,000 in £1 shares. Analytical and manufacturing chemists, etc. Subscribers: A. R. Hartwright, 297, Seven Sisters Road, London, N.4, C.H. Field.

I.G. Dyestuffs in Peru

THE I.G., according to reports in the United States Press, is preparing large stocks of dyes in Peru. This will be of great assistance to local industries, which are hampered by lack of capital.

Joint Industrial Conference

AT the first joint committee for the consideration of the agenda for the industrial conference between the General Council of the Trades Union Congress and the representative group of employers, Sir Alfred Mond was voted to the chair on the proposition of Mr. Ben Turner, chairman of the General Council of the Trades Union Congress. Sir Alfred Mond proposed that the chair should be occupied at the next joint committee meeting by Mr. Ben Turner and subsequently by alternate chairmen. This was agreed to. There were present Sir Alfred Mond, Mr. Ben Turner, Sir David Milne-Watson, Lord Londonderry, Lord Ashfield, Colonel Vernon Willey, Mr. George Hicks, Mr. W. M. Citrine, Mr. Arthur Pugh, Mr. Ernest Bevin, Mr. Tom Richards, Mr. Will Thorne, and Mr. Conway Davies and Mr. W. Milne Bailey, Secretaries. Apologies were received from Lord Weir and Sir Hugo Hirst for their absence as they were abroad.

The question of the agenda was discussed fully and it was decided that the agenda agreed by the joint committee should be referred respectively to the General Council of the Trades Union Congress and the representative group of employers. It was arranged that for the consideration of the various items of the agenda further joint committee meetings should be held weekly. In view of the large field of industrial problems covered by the agenda and the importance of those problems, it was agreed that some lapse of time must occur before any complete and detailed information could be communicated to the press. Arrangements will be made for further full joint conferences as required.

Society of Glass Technology

THE president, Mr. Walter Butterworth, senior, presided at a meeting of the Society of Glass Technology held in Leeds on Wednesday, March 21. Mr. E. J. C. Bowmaker read a paper on "A method for the determination of the probable durability of tank blocks." The results obtained by the tests outlined were closely parallel to the behaviour of the blocks tested when used in the glass tank. A further paper was read by J. T. Howart and Professor W. E. S. Turner, and dealt with "The study of the fundamental reaction in glass making." The reaction between silica and sodium carbonate was studied in two ways, namely, (1) by determining the decomposition pressures over a range of temperature up to about 800° C.; and (2) by time-temperature experiments in open crucibles. A special apparatus of fused quartz was designed for the decomposition pressure determinations, and it was used also for the measurement of the dissociation pressure of sodium carbonate up to 1,000°.

Continental Trips for I.C.I. Workers

IMPERIAL Chemical Industries, Ltd., is among the first of the great industrial concerns to organise holidays on the Continent for its workers. One of the results of the advanced programme which is being developed by the central labour department is that the large majority of the 40,000 employees can qualify for a full week's holiday with pay. Special efforts are being made to encourage the idea of travel on the Continent, and low inclusive prices have been arranged for tours throughout the summer to Paris, Belgium, and Lucerne. The scheme is explained in the April *I.C.I. Magazine.*

The excellent spirit already created between management and employees in the combine is shown by the fact that this magazine, first published in January, has attained a net circulation of 35,000 copies and is already the largest magazine of its kind in the world. It is directed personally by Mr. Henry Mond, the editor-in-chief being Mr. R. Lloyd Roberts, the combine's chief labour adviser.

The current issue includes a short history of one of the constituent companies, Brunner, Mond and Co., Ltd., and gives an interesting account of the foundation, only 55 years ago, of this great British chemical firm. In 1875 there were fewer than 180 workers on the wages list; the total to-day is little short of 9,000. Other articles in this issue include a description of the great block of offices now being completed at Millbank, Westminster, for the combine, semi-technical articles, and news from the 36 constituent companies.